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LAKE CARRIERS' ASSOCIATION.

To consider and take action upon all general questions relating to the navigation and carrying business of the Great Lakes, maintain necessary shipping offices and in general to protect the common interests of Lake Carriers, and improve the character of the service rendered to the public.

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THE DOMINION OF CANADA, AS WELL AS THE UNITED STATES, INTERESTED.

LAKE ERIE LEVELS—EVAPORATION NOT WHOLLY RESPONSIBLE—INJURY TO GENERAL COMMERCE NOT PERMISSIBLE—HENRY T. NILES SPIRITEDLY SUPPORTS THE ESTABLISHMENT OF AN INTERNATIONAL COMMISSION.

TOLEDO, OHIO, Aug. 10, 1899.

THE MARINE RECORD:

Yours of recent date asking my views on the subject of lake levels received. I have become familiar with the lake levels since 1835 in connection with an important case now pending in the Supreme Court of the United States involving the title to about 5,000 acres of land, which, in 1835, was a part of Lake Erie, but which, by the lowering of its level and by the consequent recession of its water, is now dry. In that case, it develops, that sometime between 1835 and 1850 the level of Lake Erie had so far risen as to sweep away islands near shore seven miles long and eight or ten rods wide and the high water killed oak trees at least 100 years old. As to the cause of this rise we are of course in the dark. Since then the lake has fallen, though sometimes rising for awhile, but with a general lowering of its level. I do not think evaporation from the surface of the lakes themselves cuts much figure, as it is year after year about the same surface, but the diminished rainfall which is caused by the wholesale destruction of the timber in what was 50 years ago an unbroken wilderness and the greater evaporation from, and absorption by the cleared and cultivated lands, are the important factors in this fall of the lake, which will doubtless continue to act perhaps with increasing force. The practical fact is, the lake level has continued to fall since the settlement of the great northwest commenced in a large way and will doubtless continue to fall. It has been suggested that the lake level may be raised two or three feet by narrowing the passage of the outflow at the Sioux, Detroit and Niagara rivers. This could doubtless be done without very great expense as compared with the vastness of the lake commerce, but it is rendered impracticable by the fact that the damage would be very much greater than any possible benefit. Within 20 miles of Toledo the direct damage which would be caused by raising the water of the lake three feet would be counted by hundreds of thousands of dollars, and the damage around the entire chain of lakes would mount high up into the millions. This objection would not apply to keeping the present level by the proposed means. I apprehend, however,

that it is the part of practical wisdom to recognize the fact that such diversions as the Chicago drainage canal and canals to facilitate navigation, and for manufacturing purposes, are things that cannot be prevented and that the lowering of the lakes by natural causes will continue, and to make the best of this condition.

Fortunately, there is a measure now under consideration which will make the depth of the lake channels and the deepening of the entrances to lake harbors, now everywhere clamored for, less important. This is a proper connection between the lake channels and harbors, such as they are, and the Hudson river and the Atlantic ocean. This is at best a formidable work, but it is now shorn of its greatest uncertainties and the cost is brought within limits that will certainly be repaid every five years by the absolute saving to the vast commerce and interests involved.

United States Engineer, Major Symons, has demonstrated: First, that on account of the cost of construction and navigation, large lake and ocean vessels could not with economy use a ship canal, if built. Second, that a barge canal fed by Lake Erie and with a descending current from Buffalo to the Hudson river is entirely practicable and one large enough to take a tow of 1,500 tons or 50,000 bushel barges could be built for something like \$50,000,000, or one-fifth the cost of a ship canal. Third, that including the cost of transfer from large lake vessels, this would be the cheapest possible freight from the Great Lakes to tidewater. Fourth, that such barges which could enter all the lake ports with their present depth of water would, as a matter of practical business economy, take all the freight, which would vastly increase from the lower lake ports to New York, without transfer and at the lowest possible cost, and bring back at the lowest cost, all the products of the east and Europe destined for distribution throughout the vast territory, of which the chain of Great Lakes is the natural outlet. This is a matter of such vital importance to all the lake cities and to the territories penetrated by the great railroad systems reaching out from all the principal lake ports to the 30,000,000 or 40,000,000 of people, whose natural outlet and inlet they constitute, that it seems to me that we should all join in a united demand in the name and interests of these millions, that this great enterprise should at once be undertaken and pushed to speedy completion by the United States. I am glad to see, from your letter published in the correspondence of Governor Roosevelt's canal committee, that you entirely agree with me on this important subject.

The commission, proposed by Mr. Firth, should be appointed as the only practical mode of discharging the great duty of protecting navigation, for which purpose the waters, both of this country and Canada, are held in trust by the governments and it should be international, as the interests are international and no action of either government should be effective without the co-operation of the other. Such a commission could determine the effect of any drainage, power or navigation canal and what was necessary to counteract its injurious effect upon navigation, and I see no reason why those desiring the benefit of such canals should not at the time, and as compensation for the use of public waters, be required to do what was necessary to prevent injuring commerce. What the government would require of individuals or corporations it would of course do itself, but nothing can be intelligently done without some such authority as will be possessed by such a commission. Certainly the commerce of the Great Lakes, the largest in the world, should no longer be left to the present haphazard methods and to be interfered with in a large or small way, as the supposed necessities or interests of cities, corporations or individuals may dictate. I certainly hope Mr. Firth's proposition will be adopted, and that at the same

time, that all will unite in demanding a barge canal, and that all members of Congress from the vast territory interested will be urged to use their best efforts to push forward this greatest of necessities while not neglecting Mr. Firth's wise and useful suggestion. Yours truly,

HENRY T. NILES.

FOR CONGRESSIONAL ACTION.

TO REGULATE LAKE LEVELS—COMPLETE DATA BEING OBTAINED—COLONEL LYDECKER, CORPS OF ENGINEERS, U. S. ARMY, ENDORSES GOVERNMENTAL ACTION AND SUPERVISION.

UNITED STATES ENGINEER OFFICE, }
DETROIT, MICH., Aug. 11, 1899. }

THE MARINE RECORD:

I have your letter of August 1, enclosing copy of an article by Mr. F. J. Firth in relation to lake levels, and requesting an expression of my views as to how they are likely to be affected by a series of canals tapping the lakes, as outlined in that communication.

In reply I beg to state that this question is now being closely studied, and I have several field parties at work with the special purpose of obtaining data required for a proper discussion of it; for this reason, and also because of other pressing work on which I am now engaged, I cannot undertake to formulate my views on this important matter at this time, but it is probable that report on the result of investigations in progress will be presented to Congress at its next session.

In the meantime I limit myself to stating it as my opinion that the lowering of level that is likely to attach to the unregulated opening of such new channels of discharge as you refer to, is a matter of great "practical importance;" also that the time has arrived when governmental action should be taken to protect the commerce of the lakes against such lowering of level, and that such action should be predicated on international consideration and agreement.

Very respectfully,

G. J. LYDECKER.

Lt. Colonel, Corps of Engineers, U. S. A.

TAPPING THE LAKES.

APEX OF THE CURVES WILL BE LOWERED—MR. M. J. BUTLER, CHIEF ENGINEER, THE BAY OF QUINTE RAILWAY CO., MEMBER OF THE INSTITUTE C. E., ETC., SAYS EVERY ADDITIONAL OUTLET MUST TEND TOWARD REDUCING THE MEAN FLOW.

DESERONTO, ONT., Aug. 14, 1899.

THE MARINE RECORD, Cleveland, O.:

I am very much obliged for the copy of your interesting paper containing the articles on "Tapping the Lakes" and "Maintain Lake Levels." I have read a number of articles written by able men, tending to show that the Chicago drainage canal would not materially affect lake levels. I believe "the wish is father to the thought." 10,000 cubic feet per second is approximately $\frac{1}{3}$ of the mean flow of the Niagara river, every additional outlet will tend to reduce the mean flow, the fluctuation in level due to wind, difference in barometric pressure, etc., will still continue, but in my judgment the apex of the curves will be lowered to a degree approximating the quantity of water abstracted.

Yours very truly,

M. J. BUTLER,
M. Inst. C. E., Etc.

THE twin screw steamer Fulton Market, which is so well-known in New York harbor, has triple-expansion engines, built by John W. Sullivan, and Roberts boilers of about 700 horse-power. She was built about five years ago and, during the whole period, she has never experienced an hour's delay which could be traced to the boilers, and no repairs to same have ever been necessary.



CHICAGO.

Special Correspondence to The Marine Record.

Another keel has been laid this week, at the yards of the Chicago Ship Building Co., to the order of the Minnesota Steamship Co., Cleveland, second keel will be laid shortly.

The insurance loss on the John Otis from the recent fire has been adjusted at \$4,700. Temporary repairs will be made and the boat then taken to the Sturgeon Bay dry dock for final repairs.

The season's record for the whaleback Christopher Columbus was made on Sunday. She carried 3,500 passengers going to, and 3,800 returning from Milwaukee. An excursion of letter carriers comprised the bulk of the steamer's living freight.

The Canada-Atlantic line will need a lively jag of high-classed tonnage next season, as their charter of the Menominee fleet expires. Canadian builders will now have a chance to establish a large shipbuilding plant, if they will, otherwise, vessels under the American flag can enter the trade, as it is coastal, but international.

After being dismantled, the wooden steamer George W. Morley, lying in five fathoms off Evanston, will be raised, preparations are now being made to build a coffer dam around the hull. The Morley stranded, loaded with coal, in November 1897, her machinery was salvaged by the Dunham Towing & Wrecking Co., and now they are after the hull and cargo.

While discharging at the Coxe Bros.' coal docks on the north branch, this week, the hoisting fall parted and the iron bucket shot through the decks and out on the starboard side of the steamer Charles Stewart Parnell. Seems that the timely use of a marlin spike would have saved this \$2,000 outlay, luckily no lives were lost, but it was quite an accident that there wasn't.

The world and his wife travel to the lake front these times, never was there such a passenger business as has developed here this season, and every half decent craft that can turn a wheel is toting passengers. The finest class of boats in the old established lines have all that they can possibly do, though the season is a banner one for gaining and making records in the passenger carrying business.

There is a hitch with the tug companies at Milwaukee, and they seem in no hurry to join the combine, the same situation prevails in one line here, although it might have been worked better from this end if certain newspaper telegraphic stuff had been left alone and the business conducted in an above board way. Fleets of tugs are not sold on daily telegraphic newspaper reports, nor are purchasers benevolently influenced thereby.

Another good man has gone wrong on the rotary engine craze. It is Elisha Seymour this time and he figures on putting Parsons' turbine propeller wheels in the shade altogether and come next to the perpetual motion idea. Seymour is impecunious just now, they all are after awhile. A Swedish sailor, with a hand on him like a polar bear's claw, told me the other day, and very seriously, too, that he had perpetual motion fixed all right, and that the "ting would go himself."

A Philadelphia man writes the following to General Passenger Agent Cory, of the Graham & Morton Line: "I have been informed and am much interested in the statement that your company has built a new steamship named Splicer to carry bridal couples across the lake to St. Joseph. Will you please send me particulars." Mr. Cory answered that the Splicer was not yet in commission under that name and that the sister ship, the Divorcee, was still the matter of future consideration with his company.

It is expected that the ore-unloading plants at South Chicago will be operated day and night without a break until the close of navigation. The rush is to enable the steel interests to pile up a surplus of ore so as to avoid as much as possible the paying of the higher rail freight which the big demand for ore will make necessary next winter. Ore is now coming into South Chicago in a larger volume than ever before known. The July receipts at the Calumet were 363,923 tons, as against 333,180 tons for July of last year.

The local steamboat inspectors find that the hull and equipment of the City of Grand Rapids is all right. She carried quite a number of excursionists a few days ago. Another and a comparatively new passenger steamer out of this port is meeting with quite a hard name, though I confess that there is nothing in the reports that I hear that ought to act so derogatory, in any case, she is meeting with quite a large patronage, and unless something more comes up regarding her, I can't very well mention her name.

With but one charter, made on Wednesday, the grain trade was exceeding dull, but rates were marked up a notch. Conditions seem different on each cargo offered, however,

and the charter of the Britannic at 2½ cents, was said not to be a fair criterion of the market as it now stands. The line boats to Buffalo keep well filled up both ways and it is certain that larger new tonnage will be looked for in next season's work. I hear that there is figuring on new tonnage from a dozen different quarters, and that some of it must be built, even at fancy figures.

Capt. Lyman Feltus, who some time ago purchased about 80 acres of timber and farm land on the border of Paw Paw Lake, Mich., has recently erected a fine building for resorters which has been designated the "Wigwam." He has plotted out a large portion of his land fronting the lake and many lots have been sold to Chicagoans who have built cottages thereon. Last Saturday the captain launched a very handsome steamer, 60 feet long, 14 feet beam, 4½ feet hold, which he had built on the lake front. The new steamer will be used for pleasure excursions on Paw Paw Lake.

Ex-Alderman Miles Barry, of Chicago, was the first tug owner to be paid by the Great Lakes Towing Co., The price is not given out, but the amount paid for Barry Brothers' Independent Tug Line was upwards of \$125,000. Miles E. Barry is to manage the Chicago office of the trust, and Peter Barry will have charge at South Chicago. The offices of the trust will be at the foot of Franklin street, in the old offices of the Barry line, and the South Chicago offices of the latter company at Ninety-Second street bridge will also be utilized.

Grain elevator capacity at the head of Lake Superior will be increased 13,500,000 bushels during the coming year. The houses already building, or for which plans have been made, are as follows:

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| Great Northern, Superior..... | 5,000,000 |
| Peavey, Duluth..... | 5,000,000 |
| Omaha, Allouez Bay, Superior..... | 1,250,000 |
| U. S. Flour Milling Co., Duluth..... | 1,000,000 |
| U. S. Flour Milling Co., Superior..... | 300,000 |
| Addition to Consolidated, Duluth..... | 700,000 |
| Hall Cleaning-House, Superior..... | 50,000 |

Of these the Great Northern, Peavey, Hall's and the one for the Imperial mill at Rice's Point are now being built.

A report was circulated this week that the American Ship Building Co. was to dismantle the West Bay City yard, distributing the machinery to the other shipyards of the trust, and selling the real estate. This was denied, and the statement was made that some tools were being sent to the other yards. W. L. Brown, president of the American Ship Building Co., denied that the Bay City shipyard was to be dismantled. Some of the machinery was being brought to Chicago, and other parts were being sent to Detroit, but the ultimate disposition of the plant was far from being settled. There is plenty of work for the entire plant now if the material could be procured for building, and as regards the tools, the plant of an ordinary shipyard is not worth very much unless in active use. It is safe to say that the West Bay City yard would be working if there was steel to be used or that could be got at decent figures.

BUFFALO.

Special Correspondence to The Marine Record.

Owing to the strong easterly winds, the water in the Welland canal has been low this week. The steamer Algonquin went aground in the railway bridge on Wednesday and blocked all traffic on the road until released.

In a recent item it was stated that the engine of the steamer India, built by the Calvin Co. L'td., Kingston, Ont. was shipped from London, England. This is an error, the triple expansion was built by the Calvin Co. at their own shops in Kingston and is as good a piece of work all through as could be turned out of any engine building plant on the lakes.

There is a little dissatisfaction here this week among the firemen on tugs and they ask for a raise of \$5 a month in wages. This is a small matter for the few remaining months of the season and it is so well divided that the amount could easily be paid to the score of workers asking for the raise. Owners of vessels act voluntarily in increasing pay, the tug management ought to do the same.

Erie canal boatmen have combined for the purpose of establishing a fair and uniform canal freight rate. They have appointed a committee whose duty it shall be to confer and fix upon a rate satisfactory to all concerned. All boats will be expected to report at the association office, boats to load in turn as they report. Any forwarder may procure boats from the association at the freight rate established. Promoters of the scheme say that the organization is for the purpose of procuring a remunerative price for carrying and to thereby prevent the fluctuation in price from day to day.

And now it is rumored that the Northern Steamship Co. is contemplating duplicating its two passenger steamers, North West and North Land. It is said that the company has been considering this for some time, and may give the order for the erection of the two mammoth steamers before the present season closes. It is understood that the orders, if given, will not be rush ones, so there is a likelihood that they will not appear on the lakes before the latter part of next season, and it may not be until the opening of the season of 1901. The present sister ships are floating palaces, and cost \$850,000 apiece. The contract price for their construction, etc., was \$750,000, but it is the understanding that before they were completed an extra hundred thousand dollars had been put into each of them. The new ones, if anything, will cost even more than these, because the company will make them more pretentious in every way.

DETROIT.

Special Correspondence to The Marine Record.

Owners of lumber carriers expect to see the rate from Duluth to Buffalo and Tonawanda go to \$3 per 1,000 feet before Sept. 1.

Engines and boilers for the new steel steamer to be built by the Jenks Ship Building Co., at Port Huron, are nearly completed.

The Craig Ship Building Co., Toledo, has libeled the schooner Emerald for \$395.44. The claim is for repairs and supplies furnished the boat.

B. B. Inman, formerly manager of the Inman Tug Line, Duluth, has been appointed resident manager of the tugs of the trust, at Duluth and Superior.

The small steamer Clinton has been released from the "middle ground," off St. Clair, but the schooner Smith & Post was not floated on Wednesday.

The contract for raising the steamer Albert Y. Gowen, sunk in the Detroit river, off Ft. Wayne, has been let to the Michigan Wrecking & Salvage Co. The tug H. W. Johnson with pontoons and other apparatus, is working on the Gowen.

A Canadian bombardment of our merchant tonnage set in this week. The ferry Lansdowne sunk the Morley, the Dunsmore the Leader and the Ireland the Bessie. The sunken trio are all under the American flag, also went under water, and the rammers all sailed away under the Dominion ensign.

According to the report received here Tuesday, it will be towards the end of the week before wrecking master John Quinn gets the sunken whaleback steamer, John B. Trevor afloat. The work of patching up the big hole in her side progresses slowly.

There has been any quantity of loose newspaper talk, but just the same is Mr. David Carter general manager of the D. & C. Navigation Co. Mr. Newman is also manager of the C. & B. Line at Cleveland, although a good many had him making a change as well.

It is learned that the surveyors at work on the Georgian Bay canal route have made a glowing report of the condition at the "height of land," near Lake Nipissing. They have discovered the conditions favorable for a deep waterway, and that the cost at that point will be much below the original estimate.

Mr. Harry L. Shaw, who has been chief engineer all summer on the U. S. lake survey steamer Fanny H. has been compelled to resign his position, owing to indifferent health. Capt. Harry will rusticate and resuscitate at Saginaw for a few weeks when it is hoped that he will get around again with a fresh grip on the locks of old Father Time.

Credit is due Capt. John S. Quinn for his excellent work in raising and dry docking the car ferry Lansdowne. Capt. Quinn is always successful in his undertakings, possibly he generally sees his finish before he tackles a job. He is now after the Trevor, but passing vessels are giving him a hard old time of it, as they won't slow down in passing or pay any attention to his work or signals.

Parker & Millen have chartered their steamer A. A. Parker and consort B. W. Parker to M. A. Hanna & Co., of Cleveland for the balance of the season. The consideration is said to be about \$30,000. Iron ore must be brought forward. Corrigan, McKinney & Co., Cleveland, purchased the last fleet from here and this charter is a good deal of a semi-purchase judging from the figures involved.

Prosecuting Attorney Walsh, of Port Huron, says that in all probability he will commence criminal action against the owners of the lost schooner John Breden for manslaughter. The coroner's jury censured the owners for allowing the Breden to leave port in a badly dilapidated condition with the knowledge that she was unseaworthy. The condition of the boat was the direct cause of three deaths from drowning.

The report that the Wheeler shipyard is to be dismantled is premature. Mr. McGinnis, from Cleveland, who is in charge for the trust, says he knows nothing of such a move, and does not believe it is to be done. The equipment of the yard is extensive, everything in the line of tools being practically duplicated in what is known as the north and south yards, and some of the tools, which will not be needed, are being shipped to yards where work is on hand requiring them.

Experiments with a 12 horse-power gasoline engine will be tried by the Marquette, Mich., life-saving crew, on a 30-foot boat. Heretofore the method of propelling a life-boat has been with oars alone, though sails have been used on rare occasions. There can be only one or two lake stations where anything more is required than is now in service, steam life-boats are in use on salt water at exposed stations, but a tug can always be hired to tow the surf boats, except at one or two points as I have stated.

Capt. Humphrey has returned after taking the steamer Mae to the coast, and he is loud in the praises of his late command, even comparing her to the best that ever crossed the Atlantic, in fact he was ready to take her to Japan, but why Japan? Shanghai, or any other around the moon destination, would be just as good as say, Nagasaki. Capt. Humphrey is not much impressed with the way shipping is handled in New York, he says: "To begin with, they don't do business on the salt water as they do on the lakes. There don't

seem to be the snap and vim in marine circles. Every one wants the most money he can get for the least work without regard for the quality of work. Prices of everything there are high in consequence. For instance, you have to pay \$240 a day to lie at a dock." Well, captain, all farms are not worked alike, some use a rake and others a hoe, but its best to know all fashions just the same.

Capt. James Reid recently resumed lifting operations on the sunken steamer Cayuga, and while down alongside of the wreck narrowly escaped losing his life. The tender, apparently attached no importance to the absence of signals until at the end of four hours a suggestion was made that something might have gone wrong under water. Then Capt. Reid was brought to the surface and found to be unconscious and in a serious condition. He was taken to Petoskey for treatment and was soon able to be around, although in a greatly weakened condition.

Messrs. Ritchie and Ruple are in Bay City making surveys and drawing plans for the new dry dock for the Davidson shipyard. The dredging will begin this week. The dock will be 500 feet long and 60 feet wide at the gate. Now that Capt. Davidson is about through with the tug combine business we may look for some splendid and rapid work being done in dry dock building at W. Bay City. Mr. Davidson, Jr. and Mr. Harold will actively assist the Captain in carrying out his plans in the establishment of what is destined to be a great industry on the shores of Lake Huron.

Mayor Maybury is interested in the question of the erection of a monument in memory of the late Gen. O. M. Poe. The Lake Carriers' Association proposed to erect one between the locks at Sault Ste. Marie and the mayor was surprised when at the "Soo" last week, to find that the monument had not been placed, and, so far as he can learn, nothing has been done. He will endeavor to ascertain what the Lake Carriers' Association has done in the matter. Unless they propose to act the mayor says that he will take the question up and endeavor to have money for the erection of the monument subscribed.

The damage to the Poe lock at St. Mary's Falls canal, by the steamer William Siemens, has not delayed traffic. The Canadian lock is but little used and with the Wietzel lock the "Soo" is fairly well taken care of for the present. Attention should now be turned to the reconstruction of the St. Clair Flats canal. It is thought that the canal should be enlarged to double its present width and a new one built of the same dimensions, so as to accommodate up and down-bound traffic. Whatever improvements are made, stone and concrete should be used, at least, the U. S. government should do clean, sightly and permanent work in these large undertakings, and not string together a line of old, decaying, rickety wooden structures.

The wrecked steamer Harlem was floated off the rocks of Isle Royale Monday by the Thompson Wrecking Company, but when a couple of her own lengths from shore, she began to fill rapidly. To save the wreck from going down in deep water, the wreckers were compelled to beach her. The steamer is now resting on a shoal two miles southwest of Menagerie Island light. More pumps will be needed to keep the steamer afloat. The Harlem went ashore in a gale last fall, and was sold by the underwriters to the Thompson Company for \$30,000. That concern has been working for several months to get the steamer afloat. The Record stated last week that she would come off with a couple of hundred tons of cement in her bottom, perhaps they forgot to put it in and trusted to the pumps. They can have another trial now but she ought to have been kept afloat when she was waterborne.

CLEVELAND.

Special Correspondence to The Marine Record.

Mr. A. M. Crowl is the popular ticket agent for the C. & B. line this season.

The steamer J. W. Moore is out of dry dock after repairs being made to hull damage.

From last accounts the hull of the schooner Sophia Minch is still tilting up with sand off Ashtabula.

Capt. John and Alfred Mitchell are at Buffalo to-day attending the funeral of the late W. H. Gratwick.

Capt. C. E. Benham has a copy of the Ashtabula Recorder dated August 19, 1825. According to the paper the schooner Mariner, Capt. Blake, reached Buffalo that week from Mackinaw with a cargo of 570 packs of furs valued at \$270,000.

In the case of the loss of Capt. Brown, also his wife and only son, through the recent foundering of the Margaret Olwill, it is not known how the estate is to be divided. The French law assumes that in all such cases the woman succeeds first and appoints an official to administer the husband's estate.

Capt. John Mitchell on Tuesday received a dispatch from Buffalo stating that Mr. W. H. Gratwick, the well known vessel owner of that port was dead. Mr. Gratwick was interested with Capt. Mitchell in the ownership of a number of boats and two steamers were named after him. He had been sick for a long time.

The wages of the ore handlers at Ohio ports are higher now than they have been for a number of years. At the opening of the season they were granted an advance of a cent a ton and last week they demanded an advance of 2½ cents a ton. The dock managers took the matter up and agreed to advance the rate on shoveling ore 1½ cents a ton, with the understanding that the new rate would cover all kinds of

cargoes and that there would be no extra charges on vessels that were not trimmed, and there will be no trouble at the Ohio ports, nor any change in the discharging rate to the vessels. The rate is now 12½ cents.

S. H. Crowl, Esq., known in shipping circles as a marine lawyer, is a candidate for the office of County Solicitor. "Sam" has a lot of friends, he is ever obliging, moreover he recognizes that the duty of an official is to serve and not to rule his constituents. Mr. Crowl is an ambitious and studious young man who would well fill the office of County Solicitor.

The work of dredging the river is about complete from the mouth to the Lake Shore bridge. The channel there has been dredged to the depth of 22 feet. Colonel Jared A. Smith says that a good many of the boats that grounded were put there by natural stupidity on the part of the masters, who disregarding the signals of the crews of the plant and of the tugs steered to the wrong side of the dredge, and of, course, went on the bottom.

Mr. Robert Logan, accompanied by Mr. Hayes, shore engineer of the fleet, made a survey of the Empire City at Ashtabula on Saturday, and computed the damage sustained by her collision on the last trip down, when the whaleback John B. Trevor was sunk at St. Clair Flats by one of her own consorts. A suction, bunching of large vessels, or most any other reason seems to have been responsible for the damage done to and the detention of these at present valuable cargo carriers.

The old schooner H. G. Cleveland, Capt. Frank Jennings, is considered a total loss. She foundered a few miles west of this port, and, like the Margaret Olwill, will be a dangerous obstruction to navigation until removed. Something will probably go pounding on top of these old wrecks and then they will be located. The Cleveland was built at Black river in 1867 and long ago had seen her best days. A great deal of sympathy is offered Capt. Jennings, who, although a hard worker for many years, has lost his little all in the schooner.

The iron steamer Onoko which was badly damaged at Ashtabula last Sunday, is receiving temporary repairs and discharging her ore cargo, preparatory to coming to Cleveland for final repairs. It is said that her repairs will delay her for ten days. The Onoko has always been the luckiest old craft afloat, she was built here in 1882 and has been a money earner from the start. Fifteen years ago she was known as the "bull of the woods" and most too big to handle, she would make even now, a good sized longboat for the biggest of them to tackle.

The Terra del Fuego Indians light fires on the beach to coax a boat's crew ashore and I have heard that it is also an old trick of the Patagonians, but we can do this in better style on Lake Erie. Last week I noted a schooner poking ashore on account of chasing a blast furnace light, this week a large steamer with 5,000 tons of iron ore tried to hit the mouth of a live furnace a couple of miles to the eastward of the entrance to the port. It appears that a lack of water prevented the Aurania from sailing south on Willson avenue, so she fetched up to be lightered.

LETTERS AT DETROIT MARINE POST OFFICE

AUGUST 16, 1899.

To get any of these letters, addressees or their authorized agents will apply at the general delivery window or write to the postmaster at Detroit, calling for "advertised" matter, giving the date of this list and paying one cent.

Advertised matter is previously held one week awaiting delivery. It is held two weeks before it goes to the Dead Letter Office at Washington, D. C.

| | |
|----------------------------|--------------------------------|
| Brown, W. H., Davidson | Jarbean, Gideon, Roebing |
| Barwardine, Ed., Germanic | Kent, Geo., Bielman |
| Birch, Thos. F. | Lawlor, Willie, Joliet |
| Burtch, W. E. | Liptrow, Edward |
| Bliss, Lloyd, R., Huron | Leith, W., Massachusetts |
| Burton, T. G., Yakima | Marsden, Jas. A., Macy |
| Burns, John | Menmuir, C. H., S. Mitchell |
| Babbitt, Harry, Raleigh | May, Frank, Miztec |
| Barnes, Fred | McGregor, Wm., J. F. Eddy |
| Chapman, Wilfred, Hennepin | McGraw, Patrick, Roby |
| Campbell, D. | McDonnell, J. M., Herschel |
| Craig, Simpson | Shean, Thos., G. F. Williams |
| Crawright, C., Fletcher | Snyder, Jas. B., A. H. Jennie |
| Davey, Oliver G., Ralph | Shryer, Geo., Keith |
| Ellis, Chas., E., Cranage | Schneider, John A., Joliet |
| Farquhar, Elmer, Business | Tenison, Nellie, Wand |
| Hanlon, Frank, Siemens | Thompson, J. A., Wild Irishman |
| Hackett, Arthur | Woodruff, Walter, Ralph |
| Hendrickson, Capt. C. E. | Williamson, Nathan |
| Hand, Geo. C., Hand | Wheeler, S. H., Ray |
| Haywood, Vun, Helena | |

Sometime there will be a deep waterway from the Great Lakes to the Atlantic. The development of the commerce of the West will make this inevitable, but the present impatience manifested in some quarters toward the Deep Waterway Commission is certainly unreasonable. The proposed enterprise is one of vast importance, and it involves enormous expense. In determining the route, the commission is in reality acting for coming generations, and it were many times better that the enterprise should be delayed even for several years if need be, that the experience should prove that the best possible route had not been selected.—Manchester (N. H.) Union.

IRON ORE OUTPUT.

NEARER 16,000,000 THAN 15,000,000 TONS.

A prominent iron ore man wagers that the Lake Superior region will forward nearer 16,000,000 tons than 15,000,000 tons of iron ore this season. His estimate for the mines tributary to Duluth-Superior is 7,500,000 tons. There has been more or less talk of late that considerable iron ore would be shipped all rail this winter. According to the Evening Telegram, Superior, Wis., the ore magnate in question says that this is a mistake. He says that none will be shipped to Chicago and that is the only point to which ore could be shipped to any possible advantage all rail. The local furnaces, such as those at New Duluth, Ashland and Escanaba, will probably receive some ore, but Pittsburg and Chicago will be supplied during the season of navigation.

"I figure that the ore shipments from the Lake Superior region will be between 15,500,000 and 16,000,000 tons, divided as follows:

"Vermilion and Mesaba, 7,500,000 tons; Gogebic range, 2,500,000 tons; Marquette range, 3,000,000 tons; Menominee range, 2,500,000 tons.

"The shipments from the Lake Superior region last season were about 13,600,000 tons. The Minnesota ranges and the Gogebic range are the ones that will provide the increased ore tonnage this year. Practically all of it will be from the Minnesota ranges. There will be an increase of from 1,900,000 to 2,000,000 tons from the entire Lake Superior district and the Minnesota ranges will furnish about 1,400,000 tons of the increased shipment. The Marquette and Menominee ranges will just about hold their own this year as to output and shipments. The Gogebic will show a fair increase, but Minnesota is the bulwark of the iron ore consumers this year with their great demands.

"The Vermilion range, which last year shipped about 1,200,000 tons, will this year ship about 1,800,000 tons. I look to see the Iron Range road handle 4,000,000 tons this year; the Missabe road 2,500,000 to 3,000,000 tons, and the Eastern about 1,000,000 tons. Shipping over the Eastern will become heavier after the Saunty mine begins operating and the road is extended to it.

"Next year? There will be the same demand as this year for ore, and it will probably be a little bigger. But the mines will be in better shape to produce the commodity, and the transportation facilities will also be increased. There will be more boats and more ore cars to meet the emergencies of heavy shipping, and the whole scheme of production and transportation of say 16,000,000 tons of ore will be more easily accomplished than this year. Prices for ore will certainly be better than those at which the bulk of the ore was sold this season. The big sales were made before the boom in iron and steel commenced. I do not think the prices for ore will be as great next spring as they are now, but they will be somewhere between what they were last spring and what ore is worth to-day."

Ishpeming Iron Ore quotes Joseph Sellwood as predicting that the State of Minnesota would send out 8,000,000 tons of ore this season, and thought the entire region would furnish about 16,000,000 tons. Mr. Sellwood is spending much of his time looking over the different mining fields, and is familiar with the conditions existing in all of them. He looks for an active business in iron for several years to come, and believes those that want to insure their ore supply, should now take the precaution to prepare for it. The big mines are not always going to hold out. The constant drain at the present big volume of production makes serious inroads. There are many worked-out properties on the older ranges, and some of the new fields are already feeling the effects of big shipments.

EASTERN FREIGHTS.

Messrs. Funch, Edye & Co., New York, reports the Eastern freight situation as follows: The demand for grain tonnage since our last report not having been particularly pressing rates then reported have been barely maintained. Shippers finding offerings of vessels on a more liberal scale are, for the moment at least disinclined to follow owners' demand for further advance, and business could only be effected at a concession on part of the latter. Deal freights, whilst not quotable higher, continue firm. Chartering for timber from the Gulf ports could, as regards prompt boats, only be effected by merchants who, as an exception found themselves with a stock of timber on hand. For the last half of September and later loading, rates for this business have maintained their advancing tendency, and in some instances charterers have been driven to protect themselves by time charters, the rates paid for which latter have advanced in consequence to figures, considerably in excess of the views of time charterers for general business. Fixtures for general cargo from the Gulf have continued active, and rates thence have gradually reached a higher level. The Atlantic cotton ports have not made much progress latterly in chartering, as their limits are somewhat out of line with the figures paid at the Gulf.

Business in sail tonnage during the past week has again been very light; transactions being hampered by the firmness of owners and the consequently limited offering of vessels; the demand, however, is principally for near-by tonnage, whilst for more remote vessels the enquiry is very much lighter.

The Weather Bureau at Washington was so busy watching the hurricane swooping down toward Porto Rico that it forgot to notify the inhabitants of Ponce in time to crawl into their cyclone cellars.—The Alpena Evening Echo.

TREASURY DECISIONS.

TREASURY DEPARTMENT,
OFFICE OF THE SECRETARY,
WASHINGTON, D. C., August 11, 1899.

Special Deputy Collector of Customs, Cleveland, Ohio:

SIR: In reply to your inquiry, in letter of 8th instant, "what constitutes a sail vessel?" as described in circular No. 96, dated July 17, 1899, you are informed that the department's definition of a sail vessel, under the act of Congress approved December 21st, 1898, is a vessel depending practically entirely on the action of the winds as a motive power. Barges or consorts, so-called, usually towed by a steam vessel and depending practically upon such steam vessel for the motive power, even though provided with auxiliary sail power, for use in emergencies, or for steadying the vessel in a sea way, are not deemed by the department to be sail vessels within the meaning of the act referred to, notwithstanding such barges or consorts may technically be enrolled or licensed as "schooners" as is possibly the case with some of them.

Respectfully yours,

(Signed) O. L. SPAULDING,
Assistant Secretary.

LICENSED OFFICERS ON STEAM VESSELS.

Full complement of officers on steam vessels is determined by the local inspectors.—All registered steam vessels must carry a licensed master, mate and engineer, but are not required to carry a licensed pilot,

TREASURY DEPARTMENT, JULY 17, 1899.

SIR: In reply to your letter of the 8th instant, you are informed—

First. That a full complement of licensed officers on a steam vessel is determined by the local inspectors, and inserted by them in the certificate issued by the steamer. (See first paragraph, Department decision 9478, July 5, 1889.)

Second. A person holding joint license as master and pilot, or as mate and pilot, does not necessarily require the indorsement of the inspectors on the certificate of inspection.

Third. A person holding pilot's license cannot act under such license on a steam vessel required by the inspection certificate to carry a licensed mate.

Further, it is the opinion of the department that the inland rules of department decision 16105 govern on the river, harbors, and inland waters of Puget Sound points.

The steamer Beaver, referred to by you as having made application for a register, in order to engage in the passenger trade between Puget Sound points and Fraser river, having been certificated by the local inspectors of steam vessels for Puget Sound waters only, should not be registered without first having her new route endorsed on certificate by the inspectors, said indorsement also stating the number and character of officers and crew required for such new route, your attention being called to the fact that all registered steam vessels must carry a licensed master, mate and engineer, but are not required to carry a licensed pilot.

Respectfully yours,

O. L. SPAULDING, Assistant Secretary.

Collector of Customs, Port Townsend, Wash.

CERTIFICATES OF INSPECTION OF SAIL VESSELS AND LICENSED OFFICERS THEREOF.

TREASURY DEPARTMENT, July 17, 1899.

To collectors and other chief officers of customs, supervising and local inspectors of steam vessels:

Your attention is called to the fact that by an act of Congress approved December 21, 1898, to take effect July 1, 1899, entitled "An act concerning sail vessels of over 700 tons, and for other purposes," sections 4417, 4438, 4439 and 4440, Title LII, Revised Statutes, have been amended to include the inspection of sail vessels over 700 tons, and all other vessels and barges over 100 tons burden, carrying passengers for hire, and licensing the officers thereof.

Acting under authority of section 4462, Title LII, Revised Statutes, directing the Secretary of the Treasury to "make such regulations as may be necessary to secure the proper execution" of said title, the department has established the following regulation, deemed necessary to carry out in part the amendments to said title heretofore referred to herein, namely:

Supervising inspectors will direct their local inspectors to file with the collector or other chief officer of customs in their various districts a copy of all certificates of inspection of sail vessels over 700 tons, and all other vessels or barges carrying passengers for hire, such copies of certificates to be kept on the permanent files of the collector's office.

Collectors or other chief officers of customs should report quarterly to the Supervising Inspector-General on catalogue No. 240, the names, dates of inspection, tonnage, and name of place where inspected, and of the officers making the inspection, of such vessels, which names shall follow after the names of steam vessels reported in said catalogue No. 240, in alphabetical order.

Supervising inspectors will also report in like manner in their quarterly statements, Form 2117.

Collectors and other chief officers of customs are further directed to require all masters of sail vessels of over 700 tons, before granting clearance to such vessels, to submit to their

inspection the original certificate of inspection of such sail vessels, as well as the original license of the master and mate of the vessel.

Collectors and other chief officers of customs are further directed not to issue any license, register, or enrollment to sail vessels such as described herein unless they have satisfactory evidence that all the provisions of Title LII, Revised Statutes, as amended by the act approved December 21, 1898, have been fully complied with.

SUN'S AMPLITUDES.

The following approximate amplitudes of the Sun's rising will be given each week in this column during the season of navigation. A second bearing may be taken by compass at sunset, by reversing the east bearing given for the nearest latitude, as the change in declination for a few hours makes but a slight difference in the true bearing of the Sun's setting. The bearing may be taken when the Sun's center is on the horizon, rising or setting. The three elements which may be obtained by taking these amplitudes are the quantities known as local attraction, variation and deviation.

LAKE ERIE AND S. END LAKE MICHIGAN, LAT. 42° N.

| Sunrise. | Amplitudes. | Bearing P'ts. | Bearing Comp. |
|--------------|--------------------------------------|---------------|---------------|
| Aug. 18..... | E. 17° N. = N. 6½ E. = E. by N. ½ N. | | |
| Aug. 20..... | E. 16° N. = N. 6½ E. = E. by N. ¾ N. | | |
| Aug. 22..... | E. 15° N. = N. 6½ E. = E. by N. ¾ N. | | |
| Aug. 24..... | E. 14° N. = N. 6¾ E. = E. by N. ¾ N. | | |

LAKE ONTARIO, S. END HURON AND CENTRAL PORTION LAKE MICHIGAN, LAT. 44° N.

| Sunrise. | Amplitudes. | Bearing P'ts. | Bearing Comp. |
|--------------|--------------------------------------|---------------|---------------|
| Aug. 18..... | E. 18° N. = N. 6¾ E. = E. by N. ¾ N. | | |
| Aug. 20..... | E. 17° N. = N. 6¾ E. = E. by N. ¾ N. | | |
| Aug. 22..... | E. 16° N. = N. 6¾ E. = E. by N. ¾ N. | | |
| Aug. 24..... | E. 15° N. = N. 6¾ E. = E. by N. ¾ N. | | |

N. END LAKES HURON AND MICHIGAN, LAT. 46° N.

| Sunrise. | Amplitudes. | Bearing P'ts. | Bearing Comp. |
|--------------|--------------------------------------|---------------|---------------|
| Aug. 18..... | E. 18° N. = N. 6¾ E. = E. by N. ¾ N. | | |
| Aug. 20..... | E. 18° N. = N. 6¾ E. = E. by N. ¾ N. | | |
| Aug. 22..... | E. 17° N. = N. 6½ E. = E. by N. ½ N. | | |
| Aug. 24..... | E. 15° N. = N. 6¾ E. = E. by N. ¾ N. | | |

LAKE SUPERIOR, LAT. 48° N.

| Sunrise. | Amplitudes. | Bearing P'ts. | Bearing Comp. |
|--------------|--------------------------------------|---------------|---------------|
| Aug. 18..... | E. 19° N. = N. 6¾ E. = E. by N. ¾ N. | | |
| Aug. 20..... | E. 18° N. = N. 6¾ E. = E. by N. ¾ N. | | |
| Aug. 22..... | E. 18° N. = N. 6¾ E. = E. by N. ¾ N. | | |
| Aug. 24..... | E. 16° N. = N. 6½ E. = E. by N. ½ N. | | |

With a compass correct magnetic, the difference between the observed and true bearing or amplitude will be the variation for the locality. Should there be any deviation on the course the vessel is heading at the time of taking the bearing, the difference between the observed and the true amplitude after the variation is applied will be the amount of deviation on that course. If the correct magnetic bearing is to the right of the compass bearing, the deviation is easterly, if to the left, the deviation is westerly.

VISIBLE SUPPLY OF GRAIN

As compiled for THE MARINE RECORD, by George F. Stone
Secretary Chicago Board of Trade.

| CITIES WHERE STORED. | WHEAT. Bushels. | CORN. Bushels. | OATS. Bushels. | RYE Bushels. | BARLEY Bushels. |
|-------------------------------|-----------------|----------------|----------------|--------------|-----------------|
| Buffalo..... | 1,300,000 | 557,000 | 110,000 | 52,000 | 52,000 |
| Chicago..... | 5,926,000 | 1,971,000 | 1,029,000 | 165,000 | 21,000 |
| Detroit..... | 401,000 | 44,000 | 11,000 | 15,000 | ..... |
| Duluth..... | 3,798,000 | 244,000 | 85,000 | 45,000 | 33,000 |
| Fort William, Ont.. | 1,500,000 | ..... | ..... | ..... | ..... |
| Milwaukee..... | 58,000 | 3,000 | ..... | 1,000 | 10,000 |
| Port Arthur, Ont.... | 200,000 | ..... | ..... | ..... | ..... |
| Toledo..... | 2,169,000 | 512,000 | 245,000 | 11,000 | ..... |
| Toronto..... | 91,000 | ..... | 7,000 | ..... | 14,000 |
| On Canal..... | 747,000 | 26,000 | 257,000 | ..... | ..... |
| On Lakes..... | 310,000 | 1,546,000 | 478,000 | 25,000 | 62,000 |
| Grand Total..... | 36,306,000 | 10,181,000 | 3,887,000 | 572,000 | 361,000 |
| Corresponding Date, 1898..... | 6,897,000 | 16,017,000 | 3,081,000 | 449,000 | 243,000 |
| Increase..... | ..... | ..... | ..... | ..... | ..... |
| Decrease..... | 860,000 | 280,000 | 624,000 | 21,000 | 55,000 |

While the stock of grain at lake ports only is here given, the total shows the figures for the entire country except the Pacific Slope.

Marine Insurance—Against Liability for Collision.—A policy insured the owner of a steam tug against such loss or damage as the tug might "become legally liable for from accident caused by collision." It contained a provision that the insured warranted that the tug, with her tow, should not go out of her regular or usual channels, "and also warranted free from loss, damages, or expense caused by or arising from so doing, or from ignorance on the part of the master and pilot as to any port or place the steam tug may use, or from want of ordinary care or skill." Held, that the expression "from want of ordinary care or skill" would not be construed to apply to the contract generally, which would render it nugatory, but only to the preceding provision as to the action of the master or pilot in going to any port or place the tug might use. Rogers vs. Aetna Ins. Co., of Hartford, 95 Fed. Rep. (U. S.) 103.

SHIPPING AND MARINE JUDICIAL DECISIONS.
(COLLABORATED SPECIALLY FOR THE MARINE RECORD).

Shipping—Injuries to Seamen—Liability of Ship.—It seems that, under the general admiralty practice, a seaman injured through the use of defective appliances furnished by the owners of the ship may proceed against the ship for damages. Lafourche Packet Co. vs. Henderson, 94 Fed. Rep. (U. S.) 871.

Unseaworthiness.—Seamen who have signed shipping articles, if they have reason to believe the vessel to be unseaworthy, may demand a survey; but they are not permitted to determine for themselves the question of seaworthiness, or to leave the vessel on the ground of unseaworthiness without having required a survey. The C. F. Sargent, 95 Fed. Rep. (U. S.) 179.

Maritime Liens—Supplies Furnished in Home Port.—Where a vessel is owned by resident citizens of a state, and her headquarters are at a port therein, such place must be treated as her home port, and no lien is given by the general maritime law for supplies furnished at such port, which are presumed to have been furnished on the credit of the owners, and any liens asserted for such supplies must rest upon the laws of the state. Learned et al. vs. Brown et al., 94 Fed. Rep. (U. S.) 876.

Towage—Negligence of Tugs—Navigation of Hudson River.—It appearing by the evidence that it has not been the custom in navigating the Hudson river to send tugs ahead as scouts in stormy weather, before venturing with tows which are incapable of withstanding heavy seas, as is the practice in the larger waters opening into the ocean, and that the customary method is ordinarily safe on the river, a tug cannot be held in fault for proceeding with a tow in the customary manner without taking such precaution. The Victoria, 95 Fed. Rep. (U. S.) 184.

Forfeiture of Wages.—Shipping articles by which seamen contract to serve on a ship during a specified voyage, and until she reaches a certain port, not exceeding a stipulated term, constitute a lawful contract; and on a desertion of the ship by the seamen, without sufficient cause, before she reaches the port of discharge, or the expiration of the stated term of service, the penalty for which is a forfeiture of their wages for the time served, they are afforded no relief by the act of December 21, 1898. The C. F. Sargent, 95 Fed. Rep. (U. S.) 179.

Collision—Liability of Tug for Injury by Tow.—A tug with three barges in tow, singled on hawsers 175 fathoms in length, which without excuse passed dangerously near an anchored vessel, against which one of the barges was swept by the tide, cannot shift the burden of responsibility for the collision on the tow, merely because she herself passed in safety, as it was her duty to make due allowance for the effect of the tide on her tow, and her own fault was the proximate cause of the injury, though there may have been error of judgment in the management of the barge in extremis. The America et al., 95 Fed. Rep. (U. S.) 191.

Shipping—Injury to Cargo After Discharge—Care Required of Carrier.—The essence of every contract of affreightment is the engagement to deliver the goods to the consignee in good order; and provisions of a bill of lading that the goods shall be received by the consignee as fast as the steamer can deliver them, and that they shall be "at consignee's risk after they leave the ship's deck," cannot be so construed as to relieve the carrier from the duty to exercise reasonable care to protect the goods from injury under all circumstances until their actual delivery, and until the consignee has had a reasonable opportunity to remove them after their discharge from the ship. The St. George, 95 Fed. Rep. (M. S.) 172.

Towage—Contract—Towage of Vessel.—The amount due for the towage of a French vessel in and out of port depended, under the contract, on the tonnage of the vessel. Her French papers gave the net tonnage as 1,709 tons; but the United States customs authorities refused to accept such measurement, and had her re-measured, which gave her a net tonnage of 3,106 tons. No proof of the method by which she was measured in France was given, but it appeared from her carrying capacity and gross tonnage that the net tonnage stated in her papers could not have been reached by any rule of ordinary maritime measurement. Held, that the measurement made here would be accepted as correct, and governed the contract for towage. The Quevilly, 95 Fed. Rep. (U. S.) 182.

Marine Insurance—Limiting Time for Suit.—A policy insuring a steam tug against liability for loss or damage arising from collision provided that suit thereon must be brought within a year after the date of the loss. It also provided that the insured should not be liable, unless the liability of the tug should be established by suit, and that losses should be payable 60 days after proofs of such loss or damage and of the amount thereof. Held, that such provisions must be construed together, and that, so construed, proofs of loss could not be made until after a judicial determination of the liability of the vessel, and the limitation commenced to run 60 days after such proofs were furnished, unless they were waived. Rogers vs. Aetna Ins. Co., of Hartford, 95 Fed. Rep. (U. S.) 103.

THE U. S. MARINE HOSPITAL SERVICE.

(BY SURGEON PRESTON H. BAILHACHE).

The U. S. Marine Hospital Service is the medical bureau of the Treasury Department, and was reorganized as such in 1871. Previous to that date its management was in the hands of the collectors of customs of the seaboard ports and the surveyors of customs at river ports. It may be said to have originated in 1798 (although a marine hospital was established at Gosport in 1787-8, and another in Vineyard Haven, Mass., in 1790), and was the outcome of petitions made by citizens of Boston and others for the care and treatment of sailors in the merchant marine. These petitions were based upon the fact that not infrequently sick and disabled seamen were abandoned at the several ports of the United States, and became the care of municipalities on which they had no claim for maintenance. Congress acted upon these petitions and appropriated moneys for the erection of hospital buildings at a number of the larger ports, and a law was enacted providing a "hospital fund" by a tax upon merchant seamen. The President was authorized to appoint physicians to take charge of the hospitals, among whom may be mentioned the name of Dr. Benjamin Waterhouse, the "Jenner of America."

The appointment of physicians to the various marine hospitals finally became the political prerogative of the collectors of customs and surveyors of the ports. Many abuses arose under this arrangement, so that in 1871 the Marine Hospital Service as a medical service was organized by the appointment of a supervising surgeon. Subsequently the officer was designated as Supervising Surgeon General, and the service as a medical corps has from this beginning grown into a compact service of some ninety medical officers (surgeons, passed assistant surgeons and assistant surgeons), who, commissioned by the President, are under the direction of the Supervising Surgeon-General, of the Marine Hospital Service, and are placed in command or on duty at the various hospitals and quarantine stations of the United States. In addition to the commissioned officers there are a number of non-commissioned officers—acting assistant surgeons, sanitary inspectors, internes and hospital stewards.

The tax on seamen was abolished by Congress in 1885, and the Marine Hospital Service is now supported by the tax on tonnage.

Briefly stated, the service has charge of 21 marine hospitals and 14 national quarantine stations. Its officers physically examine officers and crews of the Revenue Cutter Service and of the Life-Saving Service. They examine all pilots of merchant vessels as to their color sense. They also examine all immigrants arriving at the several ports with a view to preventing the admission into this country of contagious or infectious disease, or imbeciles, or persons liable to become a public charge.

Regarding the quarantine division of the Marine Hospital Service, an act of Congress of 1893 empowers the Secretary of the Treasury to promulgate uniform quarantine regulations for ports in the United States, to be enforced by the State or municipal authorities, if they will undertake to enforce them, but if they refuse or fail the President is authorized to detail or appoint officers for this purpose. The law further provides that the Surgeon-General, of the Marine Hospital Service, under the direction of the Secretary of the Treasury, shall perform all the duties in respect to quarantine and the quarantine regulations which are provided for by this act. In accordance with this law regulations were promulgated, and the States and municipalities with few exceptions have enforced them. To insure this enforcement, yearly inspections of every quarantine station in the United States are made by an officer of the Marine Hospital Service, and faulty methods corrected. At several ports the quarantine management has been given over voluntarily to the national government. As a further precaution against the introduction of contagious or infectious disease, the collectors of customs may refuse entry to any vessel that has not complied with regulations. Ship sanitation at foreign ports is looked after by the consuls at said ports, and to assist the consul in times requiring unusual precautions, the President

is authorized to detail medical officers to serve with the consuls, and as there is much danger from fruit ports, medical officers are stationed at all such ports as have communication with the United States.

In order to keep the country informed as to foreign and domestic health matters, there is issued from the Marine Hospital Bureau a weekly publication known as the Public Health Reports, which contains all pertinent information regarding foreign and domestic sanitary conditions.

The following is a copy of the law governing admissions into the service:

Medical officers of the Marine Hospital Service of the United States shall hereafter be appointed by the President, by and with the advice and consent of the Senate, and no person shall be so appointed until after passing a satisfactory examination in the several branches of medicine, surgery and hygiene before a board of medical officers of the said service. Said examination shall be conducted according to rules prepared by the Supervising Surgeon-General, and approved by the Secretary of the Treasury and the President.

Sec. 2. That original appointments in the service shall



Dr. Walter Wyman
Surgeon General
U. S. Marine Hospital Service

only be made to the rank of assistant surgeon; and no officers shall be promoted to the rank of passed assistant surgeon until after four years' service and a second examination, as aforesaid; and no passed assistant surgeon shall be promoted to be surgeon until after due examination: Provided, that nothing in this act shall be so construed as to affect the rank or promotion of any officer originally appointed before the adoption of the regulations of 1879; and the President is authorized to nominate for confirmation the officers in the service on the date of the passage of this act.

Maritime Lien—Under Statutes of Louisiana—Prescription.—Under the statute of Louisiana relating to liens or privileges against vessels (Code 1870, art. 3237), as construed by the courts of the State, a vessel owned in the State, and trading in its waters, is not considered as making voyages, within the meaning of that article, and the privileges granted thereby, may be asserted at any time within six months, without regard to the number of trips made by the vessel during that time. *Learned et al. vs. Brown et al.*, 94 Fed. Rep. (U. S.) 876.

DETROIT RIVER BRIDGE.

"The collision between the steamer Morley and the car ferry Lansdowne last week brings very pointedly to view the safety and advantages that a bridge over the river would bring," said a man engaged in the transportation business. "But the claim made by the newspapers that the opposition of the vessel owners heretofore to defeat the bridge has been purely selfish and not well founded, is a mistake. Anyone who will take the trouble to read the argument of the Lake Carriers' Association against the bridge proposed by the Michigan Central in 1896, will readily see that their opposition was not against a bridge as a bridge, but against the specific bridge proposed by the one railroad for its own use."

H. D. Goulder, Esq., counsel for the association, pointed out that the project was not a bridge in the interests of all roads, but of one road (although others could have the use of it as with all such bridges authorized by Congress), and that the bridge proposed was such a one as that railroad was willing to stand the cost of for its own traffic. As an earnest of the vessel owners' position, he stated that if all the railroads

joined in the use of a bridge, then their combined use would justify the cost of a single span bridge without piers, which could be located at the narrowest point down the river, where the Wabash petitioned for it, and where the width is 1,900 feet. And he showed that the same bridge construction company that expected to build the Michigan Central bridge, had offered to build a six-track bridge across the Hudson river at New York city—with clear spans 2,000 feet long, but was denied permission because even that involved piers in the river.

"The question, therefore, is not 'why does not Congress ignore the interests of navigation and permit any one road to build its own bridge with piers in the river for the sake of cheapness?' but the question rather is, 'Will Congress treat the Detroit river differently from the Hudson, when it is clearly known that a bridge can be built with a single span further down the river, or can be built with a single span over the main channel up the river, between Walkerville and the middle ground shoal below Belle Isle?'"

"The nub of the whole question is one of dollars and cents. The combined traffic of all the roads that want a bridge will support either the up-river or the down-river requirements as to cost; whereas the Michigan Central alone could probably not support a more costly bridge than it proposes."

"Therefore, it is reasonable to suppose that Congress will still adhere to the view of the case it has held for many years and will require that the river be bridged without piers in the path of navigation (as with the Hudson river of New York); and this requirement will force the individual railroads which are seeking advantages over each other in specific locations, to get together on either the up-river or down-river locations. Then there will be no question about getting a bridge, as the Lake Carriers' Association admitted in 1896."—Detroit Journal.

THE decision rendered by the U. S. Local Steamboat Inspectors at New York whereby the mate of the steamer Hustler, Richard West, had his certificate suspended for 20 days for being at fault in causing the recent collision between the Hustler and the steam yacht Fra Diavolo, by which the latter was sunk, has caused no slight comment in shipping circles as the penalty is inadequate to the crime of error or negligence which the Board had found mate West guilty of. A strong cause of complaint is the secrecy which the board maintains in all its investigations. There is no doubt a reason for this, as they have to put judgment on their own licenses, etc., and publicity of their investigations would undoubtedly be embarrassing to the board at times.

Contracts—Coercion—Threat of Legal Proceedings.—A declaration by the agent of a tug company that he would commence legal proceedings against a foreign vessel, unless a charge made for towage was acceded to and approved by the captain, does not constitute coercion. *The Quevilly*, 95 Fed. Rep. (U. S.) 182.



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NOTWITHSTANDING the fact that several of our contemporaries insist upon illustrating the Paris ashore on the Manacles, that steamer is now at Milford Haven, being repaired.

FAIRLY good figures are being paid in the purchase of the smaller class of wooden boats, but there is nothing of any size being sold. To purchase an iron or steel vessel at this time is entirely out of the question.

THE formation of a "Great Lakes Shipwreck and Humane Society," should occupy certain of the leisure time of the most prominent shipowners and underwriters, as well as the officers of the several associations now organized to subserve the best interests of the lake marine. Those who are at present devoid of information on the subject, might look into the methods of the work carried on at nearly all ports in the world, with a view to the establishment of a similar institution on the Great Lakes.

THE amalgamation of iron and steel interests, the combination of syndicates for the building and equipment of steel ships, as well as the thousand and one other interests connected therewith, even down to the farm laborer at the plow in the wheat fields of the far west, are working at a disadvantage, if other interests are to be permitted to lower the level of the lakes. The Chicago drainage canal, next the Hurontario canal and finally the deep waterway to the coast may succeed in turning the several lakes into simple reservoirs and channel canals.

NOR much attention has been paid to the suggestion of obstructing the outflow of water at Niagara so as to back up the water and thus maintain a regular and higher level on Lake Erie. The proposed innovation never has seemed to strike a popular chord. On the other hand, it might be expected that Lake Ontario and St. Lawrence river interests would more or less object to a lessening of their water supply. There seems to be no question raised when canals are planned for various uses and purposes, but the first attempt at placing an artificial obstruction will raise a howl from the Eastward. Lakes Michigan and Huron desire, require and would insist upon the natural supply from Lake Superior being unobstructed; it is needed in the lake business. No diminution of the flow through the rivers by placing dams at or near Port Huron, or at any point in the river St. Clair, could be permitted and the same applies to the Niagara. It would seem, therefore, that when lock gates are wanted to regulate and control lake levels the first will be placed at the lower portion of the river St. Lawrence, as the key to a slack water system, which may in the course of time, or from artificial causes, ultimately eventuate.

ARE WE TO ROB LAKE LEVELS?

The uncertainty regarding the effect on lake levels of opening up large sluiceways has now become the most important subject of the moment. We cannot over-estimate the far reaching influences of the questions involved in the direct and positive action which may be brought about by the opening of artificial outlets.

The MARINE RECORD has pointed out the probable effect which the Chicago drainage canal will have on adjacent levels, and, as there is now but a comparatively short time before this outlet is to be completed, the most exact data should be gathered, so as to determine beyond the shadow of a doubt, what arguments may be brought to bear, pro and con, regarding the opening of other immense outlets, such, for instance, as a deep waterway to the coast.

There is a possibility that we are endeavoring to perpetrate one of the greatest wrongs on posterity ever known in the history of mankind. An enormous industry is now borne on the waters of the Great Lakes. Are we to leave them valleys in a few decades hence? Whatever action is taken it must be with the full consent, the unanimous and unbiased opinion of the best talent of the age. There can be no guessing contest indulged in regarding the ultimate probability of opening up immense waterways from the lakes, no scientific jealousies displayed, no pitting of one school, or set of authorities against any others, and least of all, should any private interests be permitted to bar the way to a full and free investigation of all considerations involved, even at the cost of keeping the Chicago drainage canal closed for another cycle of years.

The RECORD has used every means during the past decade in bringing this most important subject before those most nearly interested, and, as a further contribution to our already extensive work along these lines, we are permitted through the courtesy of the Hon. F. Gourdeau, Deputy Minister of Marine and Fisheries, Ottawa, to publish an excerpt from an "ad interim report on the effect of the Chicago drainage canal on the level of the lakes" as viewed from a standpoint based on hydraulics.

"The science of hydraulics is pre-eminently inductive or experimental. It is very unsafe to predict a formula on any of the observed phenomena of flowing water until verified by experiment. This arises from no analytic defect in the demonstration, but because the conditions of any two cases are seldom or never exactly alike. We can compute theoretically, within reasonable limits of accuracy, the discharge over a wire, or through a regular channel, as a canal, with given slope and dimensions. But when it comes to gauging a large river like the St. Lawrence, or any of the connecting links in the great system of our inland seas, hydraulic formulae lose their magic, and theory and speculation have to step aside and make way for experiment. Even with modern improvements in methods and instruments, discharge measurements are not only a delicate operation, but are still hemmed round with much uncertainty.

Much as are discharge computations surrounded, if not involved in mystery, they are simplicity itself compared to any approximate, much less exact determination in advance of the effect of the Chicago drainage channel on the levels of the Great Lakes. It is obvious to the plainest understanding that the surface of the lakes must, to some extent, be lowered by the opening of the new outlet, or more properly, perhaps, ancient outlet, resuscitated at Chicago. The project in theory contemplates an ultimate draught on the reservoir of 10,000 cubic feet per second at the lowest stage of Lake Michigan. With the known fluctuations of the lake, this will often exceed 15,000 cubic feet per second. To believe that this will not prejudicially affect the levels of all the lakes, except Lake Superior, as well as all their connecting waterways and outlet, would be equivalent to believing an absurdity. The commonest understanding has no difficulty in believing and appreciating this, the greatest intellect cannot soar much higher, come much nearer to a solution.

The problem is complex and intricate as unique. No hydraulic formula is applicable to it, for the simple reason that no such contingency has hitherto arisen, or is likely to ever again arise. It is so beset with extraneous, disturbing elements, impossible of elimination, as to be practically indeterminate by any known hydraulic formula. Among these are storms, changes of barometric pressure, changes in rainfall and in the percentage of the precipitation absorbed, etc. It is recorded that in the storm of Lake Erie of October 14, 1893, there was a difference of elevation of nearly twelve feet between the western and eastern ends of the lake. That is to say, at Toledo the water fell 6 feet 8 inches

below the then normal level of the lake, while at Buffalo the water rose 5 feet 3 inches, or a total difference of elevation of 11 feet 11 inches between these two places.

An idea of the complexity of the problem may be gleaned from the following assumption: Suppose that nature, in her inscrutable ways, instead of inspiring her pigmy offspring with the conception of the construction of an artificial channel from Lake Michigan to the Mississippi River, capable of discharging, at the lowest stage of lake level, not less than 10,000 cubic feet of water per second, augmenting with the increased head of pressure to a probable discharge at mean lake level of 15,000 cubic feet, and a maximum discharge at highest lake level of 17,000 cubic feet, had, in her own laboratory, fashioned and chiseled out a subterranean passage of equal capacity with the proposed Chicago drainage ditch, fitting the outlet with automatic valves and sluices to regulate the outflow in such a manner that like discharges would take place under similar heads of pressure. With present knowledge of the physics and hydraulics of the Great Lakes, it would, perchance, take a century of minute, elaborate scientific research to determine whether one gallon of Lake Michigan's water had escaped by other than the normal or natural processes—discharge through the Straits of Mackinac into Lake Huron, and absorption into the atmosphere through evaporation. It is not improbable that at the close of the century's investigations, science would retire baffled, discomfited in the contest with nature, the mystery still unsolved, that the loss would be still masked, eclipsed, concealed from human ken, unless disclosed by accident, while the fact remained that Lake Michigan was bled during every second of that century to the tune of 12,500 cubic feet, with the doctors still diagnosing the patient. The discharge would aggregate to the enormous quantity of nearly forty trillions (39,446,161,250,000) cubic feet, a quantity too vast to be comprehensible to the most trained intellect. Some tangible idea of its vastness may be presented to the mind by clothing it in the concrete form of a mass of water occupying a hollow prism or parallelepipedon, 283 miles long, 50 miles wide and 100 feet deep.

The board of engineers, in their report on this phase of the inquiry, says: "The abstraction of 10,000 cubic feet of water per second from Lake Michigan will lower the levels of all the lakes of the system, except Lake Superior, and reduce the navigable capacity of all harbors and shallows throughout the system to an extent that may be determined, if at all, by actual measurement only."

Again, they say, "The water levels of the Great Lakes are very delicate."

Mark the phraseology used by the board. The effect on the levels of the Great Lakes of the abstraction of 10,000 cubic feet per second from Lake Michigan, may be determined, if such determination be at all possible, "by actual measurement only." Manifestly, the board entertain grave doubts of its possibility under any circumstances. But, if at all possible, it is only by pursuing the modus they recommend."

THE NEW YORK YACHT RACE.

The Shamrock is scudding across the Atlantic to try conclusions with the Columbia, for the blue ribbon of the ocean. She has as company a steamer to tow her, and to take charge of her crew in the event of a mishap on the sea. This is, by the way, not so improbable as may be imagined. She is only a racing shell, and had to be strengthened in a number of ways, to make her voyage possible.

Some of our people have characterized this as unfair, but they fail to remember that the American boat which raced against the Valkyrie and won the cup, was built the same way. She was constructed thus in order to relieve her of many tons of weight, above which it was known the British boat would have to carry. The designer of the Shamrock determined to beat the Americans at their own game. He has constructed the lightest racing boat ever built, but he has to accept the disabilities which go with it.

Concerning the outcome of the race there has not been such uncertainty since the America won the cup. Ingenious calculations have been attempted on the races, or parts of races, between Defender and Columbia, and between Britannia and Shamrock, but there is really no basis for figures. It is now known that the Shamrock was not raced in any true sense against the Britannia. She beat the latter easily when she was not in trim for racing, and as soon as there was a possibility of discovering her speed she was

withdrawn. It is this uncertainty which gives excitement to the coming event, and all lovers of sport will hope that the Shamrock will have a favoring voyage across the Atlantic.

THE New York Herald reports a swamping accident this week whereby three lives were involved. The Herald reporter, with a frankness charming in its ignorant simplicity, says: "The crowd on the steamboat had witnessed the accident, but were powerless to help the men. Efforts were made to unship one of the lifeboats, but before this could be done, a Canarsie bayman rowed to the spot and saved the three." The steamer is one of those engaged in the Rockaway Beach service, an excursion boat, therefore, a carrier of thousands of people, so an effort was made to unship one of the lifeboats. Well! This is encouraging sort of news from New York Bay. We couldn't expect anything more shipshape, efficient and disciplinary from the locality of Podunk creek, a tributary of Salt river, flowing into lake Non-such, near the source of the supply of the Red rivers of the north. New York is a large district and the force of officers engaged in the work of the steamboat inspection service, no doubt, have enough to do. There is probably no time to hum or ha, on or about their inspections, the more boats they inspect the better their salary, so inspect is the word, it is also their business, their dough, dollars and cents. It does seem like a slight reflection on the inspection, though, when an excursion steamer has to make "efforts to unship one of her lifeboats while the crowd looks on powerless to help." The question occurs to us, how many excursion steamers are there in New York harbor that could have one of their small boats in the water in the proverbial time of "two shakes of a lamb's tail?" We should say that these steamers ought to have something they could float in about the same time that it would take a baby to drop overboard. Of course, a 300-pound excursionist might shoot rather lively through the air, or the intervening space between the rail of the boat and the surface of the water, so we say, a light, fluffy, feathery baby, hovering between wind and water, and, before such an object became waterborne, a boat should be ready to pick it up. It is positive, however, that more attention should be given to the methods of lowering boats, their tackle, apparel and furniture.

THE RECORD is indebted to the management of the Northern Steamship Co. for courtesies received at their hands during the past week. Nothing but the highest praise can be awarded when speaking of their twin-screw palace-like passenger steamers North West and North Land. Courtesy, convenience and comfort is assured the traveling public, while the closest attention is given to details, duty and discipline in each department on board of these boats. The making of almost schedule time in their sailings, assures that degree of decided punctuality so much desired when people are journeying from place to place.

QUITE a crop of groundings, with a few collisions, characterized the week's business on the lakes. The narrow waters of the rivers added most to the casualties.

LAKE FREIGHTS.

Iron ore is still king of the freight market and advancing rates for its carriage. The going rate from the head of the lakes is now \$1.25 cents to Ohio ports, \$1.35 paid on a Buffalo cargo, Marquette business is firm at \$1.10 and Escanaba 90 cents, with a raise of 10 cents better to Buffalo, as it has been for some time, this at least marks the \$1 ore from Escanaba. There is just a possibility of ore cargoes being bunched on Lake Erie, otherwise a moderate raise may be expected again this week as the ore must come forward.

Coal rates are gradually walking away up to where they belong, and 80 cents is now paid to Lake Michigan without any haggling; this is an advance of 10 cents since our last report, and double the figure at this time last season. Buffalo has "ruled the roost" in coal freights all season, and Ohio shippers have very unwillingly followed in paying the steady advance, minor Lake Michigan ports pay from 10 cents to 15 cents better than Milwaukee-Chicago, where good dispatch is always warranted. The Lake Superior rate is sticking at 50 cents to 55 cents, but as a Fort William charter has been placed at 60 cents this will probably be made the going rate in a day or two, as chartering has been very light and coal must be shipped west by lake before the

weather begins to break up, though coal shippers may be figuring on shipping a couple of hundred thousand tons as ballast, yet, it is a slim chance to tie to, as, with the large quantity of water ballast now carried, vessels can take the heft of a blow, out of the ring of their anchors, and get away again after only a few hours' detention.

The Chicago grain rate has been unsteady all week, on Tuesday the freight market opened at $2\frac{1}{4}$ cents on corn and closed at $2\frac{1}{2}$ cents. The rate ought to stiffen with the advance in iron ore and coal, and $2\frac{1}{2}$ cents be the going rate. Duluth grain shippers offered to fix tonnage ahead September and October at 4 cents for the latter month, as, when the new crop comes in, tall hustling will have to be done to get it sent forward, and the largest volume that ever left that port is expected to be shipped; $3\frac{1}{2}$ cents is now quoted as the going rate, wheat to Buffalo.

Lumber rates are firm at last quoted rates and chartering brisk.

The rate for discharging ore at Lake Erie ports is now placed at $12\frac{1}{2}$ cents, trimmed, or not; 1 cent more was asked but the dockmen agreed to split the difference and accept a $1\frac{1}{2}$ cent raise instead of the $2\frac{1}{2}$ cents asked.

NOTICE TO MARINERS.

DOMINION OF CANADA—ONTARIO.

TEMPORARY STOPPAGE OF BATTLE ISLAND LIGHT.—The machinery of the revolving light at Battle Island, on the north shore of Lake Superior, having become disabled, it has been necessary to discontinue the revolution of the light. Until repairs can be made this light will show as a fixed white light.

WRECK OF THE SHENANDOAH.—The wooden steamer Shenandoah is aground on Grubb Reef, west of Point Pelee, Lake Erie. Until she is removed or breaks up the wreck will be marked as indicated in Chapter 79, Revised Statutes of Canada, as amended by Order in Council of the 9th February, 1897.

F. GOURDEAU,

Deputy Minister of Marine and Fisheries.

Department Marine and Fisheries,
Ottawa, Canada, 9th August, 1899.

INVESTIGATING LAKE LEVELS.

Mr. David Molitor, Assistant Engineer, U. S. Engineer's Office, Detroit, has been detailed to Oswego to carry on work connected with the lake level investigation, which is of vital interest to navigators along the Great Lakes. Mr. Molitor has established one of three automatic water gauges located on the shores of Lake Ontario, for the purpose of giving a continuous record of the water level at Oswego. The gauge is situated on the inner breakwater in a special construction erected for the purpose of the investigation. It will be left in charge of the United States Engineer's Office at Oswego.

The object of establishing water gauges along the Great Lakes is to ascertain the natural laws which govern the level of the Great Lakes. This having once been obtained, it is the purpose of the United States Lake Survey, under whose charge the lake level investigation is conducted, to endeavor to modify the causes so that navigation can be assured a channel of continuous and uniform depth.

At the present time there are fifteen gauges upon the Great Lakes. The gauge consists of a strip of paper, upon which the water level for the place in which it is located is recorded each day.

For the work of investigation \$25,000 has already been appropriated, but the expenses of the work will no doubt call for a much larger amount.

The United States Lake Survey, which is conducting the investigation, was organized in 1865, for the purpose of making a complete survey of the Great Lakes and connecting rivers, and through its efforts, the publishing of almost all charts and maps referring to the Great Lakes can be attributed. Its work was practically completed in 1883.

A CONCRETE of remarkable strength was described by James Christie, M. Am. Soc. C. E., at a recent meeting of the engineers' club in Philadelphia. Its composition is as follows: Cement mortar, 1; slag or broken stone, 4; cast-iron cuttings (by weight), 2. Add 1 lb. of sal-ammoniac for each 50 lbs. of iron. This concrete weighs 210 to 220 lbs. per cubic foot, and will stand a crushing load of 3,000 lbs. per square inch, after four months. If the sal-ammoniac is omitted its strength is about half as great.

WATERSHED AREAS UNKNOWN.

Mr. M. J. Butler, C. E., of Deseronto, Ont., and a prominent member of most of the Canadian scientific societies, states that during the coming year there will be a strong effort made to have a topographical survey made of the Dominion of Canada. The Dominion Government has been memorialized on several occasions by the Association of Land Surveyors, and the matter has been agitated in the journals of the various scientific societies; but for the most part the public is quite ignorant of the matter.

"Canada alone among all the civilized nations I can think of," said Mr. Butler in a recent interview, "is without an accurate topographical map of its territory. No water-power development can be undertaken, for instance, on any intelligent basis under the present conditions. Its future must be estimated by guess work pure and simple.

"What is needed is a topographical and geodetic survey, which will ascertain all the physical features of each section of the country; its geology, the character of its soil, the extent and age of its forests, the areas of cleared land, the public improvements, and so forth; in fact, all the features, natural and artificial. Most important of all would be exact information as to the watersheds and the catchment area in relation to statistics of the rainfall.

"As I have said, such maps are to be found in every country except Canada; even the lesser countries of Europe and the petty Republics of South America have them. What Canada needs is an enterprise similar to the United States Coast and Geodetic Survey, which is conducted at the expense of the Federal Government at Washington.

"In the past, when Canadians, did not realize the value of their natural possessions and there was little competition for her waterways, the lack of such information was not felt. From this time on the evils arising from the absence of such information will be more and more recognized. Every stream in this province is being studied with a view to its possibilities as a source of power, and information as to the watershed is essential. We know hardly anything about the rainfall and run-off of our waterways. The water supply of them can only be estimated on the basis of accurate information as to the catchment areas.

"Take the Trent Valley canal, for instance, which is to be a series of artificial waterways connecting the natural waterways already existing. So far as I can see, there is no way of knowing whether the water supply is to be permanent throughout its length as the settlement of the country increases.

"The matter is one of great importance in lake navigation also. Our knowledge of the coast-line of Lake Ontario is far from accurate, based as it is on old charts. Until two years ago, or until Col. Anderson had a topographical survey made of the Bay of Quinte, it was impossible for a steamer to go from Kingston to Belleville without a pilot. A chart now exists showing the shoals and indentations of the land.

"The scheme we propose for the accomplishment of the work, is that the Federal Government should do the preliminary 'triangular' work, to use a technical term; then the data as to features, natural and otherwise, should be collected by the Provincial Governments. The new organization of engineers and members of other scientific professions recently formed in Toronto, at once appointed a committee to take up the matter. This was on the suggestion of Mr. Kivas Tully, C. E., who is fully convinced of the importance of such a work."

THE water in the St. Lawrence is lower by a foot than a week ago. What causes this decrease is a matter of uncertainty, but it is generally accredited to the strong winds blowing up the Great Lakes. The fall can easily be discerned by the water lines along the rocky shores, which are now about 14 inches above the water level. These changes are of annual occurrence on the river. The greatest change in level on record is seven feet. Capt. Kendall, of the Islander, states it as his experience that the water rises till about June 15, and then slowly decreases in height till October. Many theories have been advanced to account for these phenomena. One is that earthquake shocks cause the change in the water level, but the most plausible is that the northeast winds combined with a slight lunar tide holds the water back above Niagara. This causes a corresponding decrease in Lake Ontario and the St. Lawrence river. Navigation is not affected by the changes as none of the channels are so shallow that the loss in water would render them unsafe for navigation.—Ogdensburg News.

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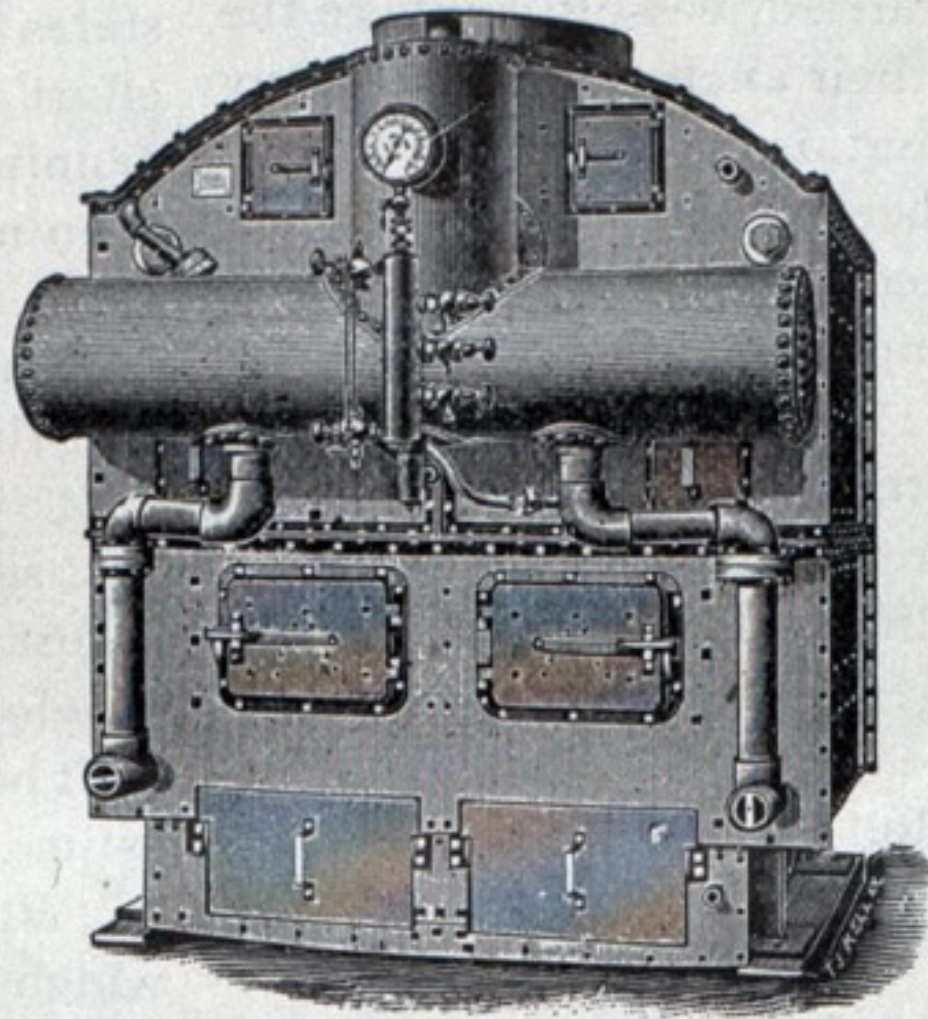
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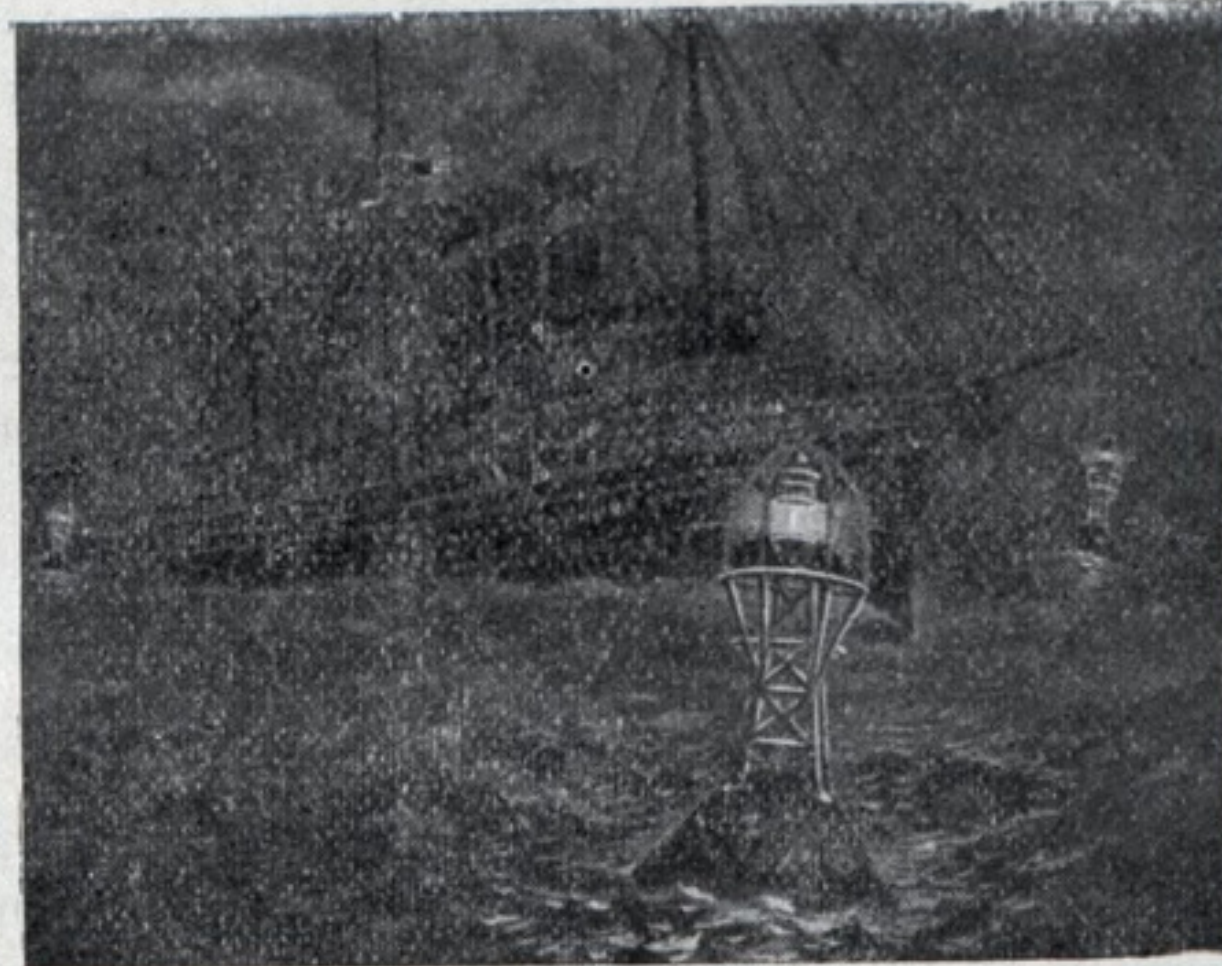
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CANADIAN DEEP WATERWAYS COMMISSION.

The action of the President of the United States in appointing commissioners to inquire into the whole question of deep water navigation of the region of the Great Lakes, called for similar action on the part of the Dominion government, and T. C. Keefer, C. M. G., Thos. Monro, C. E., and O. A. Howland, M. L. A., were appointed as the Canadian members of the Joint Commission. The duties of the commission are outlined in the Act of Congress as follows: "The President of the United States is authorized to appoint three persons, who shall have power to confer with any similar committee which may be appointed by the government of Great Britain or of the Dominion of Canada, and who shall make inquiry and report whether it is feasible to build such canals as shall enable vessels engaged in ocean commerce to pass to and fro between the Great Lakes and the Atlantic Ocean, with an adequate and controllable supply of water for continual use; where such canals can be most conveniently located; probable cost of the same with estimates in detail; and if any part of the same should be built in the territory of Canada, what regulations or treaty arrangements will be necessary between the United States and Great Britain to preserve the free use of such canal to the people of this country at all times; and all necessary facts and considerations relating to the construction and future use of deep water channels between the Great Lakes and the Atlantic Ocean."

Thomas Coltrin Keefer, C. M. G., is a son of the late George Keefer. He was born in 1821 and educated at Upper Canada College, Toronto, is an eminent canal and railway engineer; was employed on the Erie and Welland canals in 1838-45, and as chief engineer of Ottawa river works in 1845-8; in 1849, gained Lord Elgin's prize for the best essay on "The Influence of the Canals of Canada on her Agriculture," and published "Philosophy of Railways;" in 1850, was employed with the surveys for the navigation of the rapids of the St. Lawrence, etc., and was sent by the Canadian government to assist United States Consul to report on Canadian trade with the United States; in 1852, went to New York to assist in a second report on the same subject; these reports led to the Reciprocity Treaty of 1854; in 1851, made preliminary surveys for the Grand Trunk Railway, and for the railway bridge over the St. Lawrence at Montreal, and was appointed Canadian Commissioner for International Exhibition at London; was nominated Engineer to Montreal Harbor Commissioners in 1853; has constructed water works for cities of Montreal, Hamilton, and Ottawa, and been largely engaged in harbor and bridge engineering; was sometime chief engineer to railways in Upper and Lower Canada; commissioner to International Exhibition, London, 1862; and executive commissioner for Paris Exhibition, 1878; and a member of International Jury for Architecture and Engineering (Officer of Legion of Honor); in 1869-70, published a series of letters advocating the Canadian-Pacific Railway; in 1886, was vice president of American Society of Civil Engineers of New York, and chairman of Royal Commission at Montreal on ice floods; in 1887, was President of Canadian Society of Civil Engineers; and in 1888, president of American Society of Civil Engineers; elected member of Royal Society of Canada, 1891; is a M. I. C. E., London; created C. M. G. in 1878.

The Canadian Engineer gave a biographical sketch of Thos. Monro, with a portrait, in the issue of April, 1895.

Oliver Aiken Howland is a son of Hon. Sir. W. P. Howland, K. C. M. G., C. B., P. C., the first Lieutenant-Governor of Ontario, after it became a province of the Dominion. He was born at Lambton Mills, in 1847. Educated at the Upper Canada College, Toronto Model Grammar School and Toronto University. He entered upon the study of law in 1870; was admitted to the Ontario bar in 1875, and is now a member of the legal firm of Howland, Arnoldi & Bristol, Toronto. Mr. Howland has devoted considerable attention to literature and art. He is a contributor to the Week, the Canadian Magazine and other current magazines, and is the author of The New Empire, a valuable work published in 1891. He was elected president of the International Deep Waterways Association (at the Toronto Convention), and re-elected to the position at the Cleveland Convention this year. In June, 1894, he was elected member of the Provincial Parliament for South Toronto. In his legal capacity Mr. Howland has been engaged in celebrated cases before the Privy Council and other high tribunals.

PORTLAND CEMENT.

Having, to the expressed satisfaction of many of the RECORD's readers given an up-to-date account of Portland cement so far as regards its requirements, manipulation and latest improvements, we now must take leave of the subject for the present after a passing attention to one or two important details, which perhaps deserved more attention than we bestowed previously.

The following will give a tolerably correct idea of what the various cements we have referred to contain, and of their behavior:

| | CaO. | SO ₃ —Present or capable of formation. |
|--|------|--|
| Good Portland..... | 62% | 1% Cracks very slowly. |
| Ditto with 15% hydrate of lime and carbonated, as described..... | 66% | 1% No cracks; very slow set. Neat, is superior to Portland and makes a stronger and more plastic mortar. |
| Ditto with 25% of ditto.. | 68½% | 1% No cracks, still slower set. Neat, equals Portland and much superior as a mortar. |
| Slag cement..... | 50½% | 4½% Cracks in open air, may hold together for 3 to 5 years. |
| Portland cement made from slag, as already fully described..... | 63% | 2¼% No cracks, very plastic (only to be used with sand). |

*The inventor attributes these excellent results to the high per centage of CaO, which his process enables the cement to carry safely when carbonated. See our previous description of his patent.

The maximum of SO₃ allowable in Portland cement is from 1½ to 2½ per cent., although the latter figure is only permissible when the cement is used with two or three parts sand, and never in sea water. Magnesia, again, is a very undesirable component, of which 1 to 3 per cent. is high enough in most cases.

Two per cent. of gypsum is sometimes added to Portland cement with good results, but with very bad results if it increases the SO₃ of the cement beyond the above safety line. The new process, it will be remembered, dispenses with gypsum entirely.

As to judging the quality of the cement, there are two simple rules which will answer all needed purposes. First, if the cement stands satisfactorily the ordinary seven days' tests—14 to 28 may be needed by slow cements—and second, if an independent analysis show it to be free from excess of sulphur compounds and of magnesia. The latter is necessary because inferior goods can be cooked so as to pass

steam and short time tests satisfactorily, but an analysis, which need only be for CaO, MgO, and SO₃ actually present or capable of formation from the sulphide present in all Portland cement, will detect them at once.

A friend has just asked what we think of adding special silica to cement and grinding together. Some two years ago the British manufacturers, had a prolonged dispute on this identical question and finally referred it to Dr. Michaelis, who, after an exhaustive investigation, decided against it. The fact is that an acid is required to combine with the lime, and Mr. Livingston has succeeded in effecting this by his process with carbon, which could only be done with silica if heat or pressure be applied, and, of course, this is impossible. Even if it could be done about four times the quantity of silica would be required, as compared with carbon.

DANGEROUS LAKE EXCURSION.

Consideration of the narrow escape from death by the passengers on the excursion boat which started from South Haven for Milwaukee, Saturday evening, should not be permitted to cease with gratitude to a watchful Providence. The neglectful vessel owners and officials are entitled to some attention.

What does vessel inspection or legal regulation amount to as a safeguard to life on the lakes if such palpable inefficiency is tolerated and such dangers can be experienced by patrons without a fixing of the responsibility and the inflicting of a measure of punishment calculated to discourage similar recklessness in future? There was a craft long idle and evidently in need of general and thorough repair commissioned to engage in traffic which, under the best of management, involves large risk of life through danger of over-crowding and by reason of the natural carelessness of excursionists themselves. It was started for a trip across Lake Michigan with three hundred passengers, apparently without any adequate test of seaworthiness. The calking of her leaky bottom had been done in such defective manner that she was soon found to be in danger of filling with water before any shore could be reached, and it appears that the discovery of this danger alone led to the knowledge by the officers that the pumps were not in working order. The final return of the vessel and safe landing of the distressed pleasure party can scarcely be reckoned as more than one of the series of accidents which marked the attempt to turn a leaky old boat into a first-class excursion steamer chiefly by virtue of advertising.

There is no cheaper or more enjoyable and healthful recreation than a lake trip. The owners of vessels which are fit for the business should, for their own protection against loss of business and growth of public distrust, insist upon better precautions than seem to have obtained again. the transformation of vessels which cannot be safely or profitably employed in freight carrying being transformed into excursion boats to menace the lives of people who go upon the lake solely in the hope of prolonging life.—Milwaukee Sentinel.

Seamen—Abandonment of Ship—Failure to Provide Proper Quarters.—Seamen are not justified in leaving their ship before the expiration of their time of service on account of a failure to make their quarters comfortable, as required by law, where they made no complaint on that ground to the captain. The C. F. Sargent, 95 Fed. Rep. (U. S.) 179.

LAKE CARRIERS' ASSOCIATION.

SAILORS' WAGES ADVANCED.

At a meeting of the executive committee of the Lake Carriers' Association, held at the office of Capt. James Corrigan on Tuesday, August 15, the wages of cooks, firemen, wheelmen, lookouts, seamen and deckhands were advanced 10 per cent. The new schedule went into effect at once. No change was made in the wages of engineers or mates. The new schedule is not for the balance of the season, and if rates continue to advance another card will be adopted probably in September. The schedule is now as follows:

| ON STEAMERS, PER MONTH. | | | |
|-------------------------|-----------|----------|------------------|
| | 1st Class | 2d Class | 3d Class |
| Cooks..... | \$60 00 | \$55 00 | \$49 50 |
| Cooks' Helpers..... | 22 00 | 18 70 | ..... |
| Firemen..... | 38 50 | 38 50 | 33 00 to \$38 50 |
| Wheelmen..... | 38 50 | 38 50 | 33 00 to 38 50 |
| Lookouts..... | 38 50 | 38 50 | 33 00 to 38 50 |
| Oilers..... | 38 50 | ..... | ..... |
| Deckhands..... | 22 00 | 22 00 | 22 00 |

| ON CONSORT AND SAIL. | | | |
|----------------------|---------|------------------|-------|
| Cooks..... | \$38 50 | \$33 00 | ..... |
| Seamen..... | 38 50 | 28 00 to \$33 00 | ..... |

The foregoing shows a neat 10 per cent. raise over the card adopted at the opening of navigation in April. The raise is to be paid on all vessels in the association, whether on the lake or in port on the date of August 15th. Furthermore, with a continuance of fair living rates of freight another voluntary raise will be made as the season advances.

THE most striking feature of The Century for September, which will be a salt-water number, is the first installment of Captain Joshua Slocum's "Sailing Alone Around the World." This is the narrative of a daring voyage of circumnavigation, undertaken by the author in 1895, in a forty-foot sloop built by himself in Buzzard's Bay, and taken back and forth across the Atlantic and thence around Cape Horn and the Cape of Good Hope, without assistance or companionship. The distance traversed was 46,000 miles, and the accuracy of the navigator's landfalls throughout was a thing to marvel at, his chronometer for most of the time being a little tin clock of the cheapest kind. Captain Slocum was a thoroughly seasoned sailor when he started on his adventurous single-handed cruise, but his unique achievement was not without difficulties and perils that taxed to the utmost his strength, endurance and ingenuity. Other contents of this number of The Century are "The Way of a Ship," by Frank T. Bullen, author of "The Cruise of the Cachalot"; "The Atlantic Speedway," by H. Phelps Whitmarsh, author of "The World's Rough Hand"; and "Salvage," by Morgan Robertson, author of the forthcoming volume of sea tales "Where Angels Fear to Tread."

SPECIAL NOTICE TO MASTERS AND PILOTS—
BUOYS AT THE ENTRANCE TO
DETROIT RIVER.

The Department of Marine and Fisheries under whose control the Dominion of Canada has placed the establishment and system of "Aids to Navigation" on the Lakes, communicates as follows:

MARINE AND FISHERIES,
OTTAWA, Aug. 11, 1899.

Editor The Marine Record, Cleveland, O.

SIR:—I beg to enclose, herewith, copy of a letter received by the Chief Engineer of this Department from the light keeper at Bois Blanc island, who is in charge of the buoys at the mouth of the Detroit river, pointing out the great difficulty in keeping the black buoys in their present positions, and I would ask you to appeal to the masters of vessels to assist this Department in maintaining this service efficiently. These buoys are maintained chiefly for the benefit of the large draft American vessels, but if the destruction continues as it has during the present season we shall be compelled to move them away from the edge of the channel, in the way suggested by Mr. Hackett, to the detriment of shipping. If vessels would steer for Bois Blanc island as indicated in the sailing directions, this would give the buoys a berth of 400 feet. I have the honor to be,

Your obedient servant,
F. GOURDEAU, Deputy Minister.

The copy of the letter referred to in the foregoing is self-explanatory and therefore requires no comment on our part, further than to say, that we hope each master and pilot will appoint himself a committee to guard from destruction by all possible means in his power these valuable aids to navigation established at the mouth of the Detroit river.

BOIS BLANC ISLAND, AUG. 9th, 1899.

Colonel Anderson, Ottawa, Ont.

SIR: The Bar Point lightship is moored 260 feet west of the west line of the channel. Captain McKay has been trying all summer to get them to move her out but the Inspector thinks there would be more danger of collision if they moved her out. The boats at night come up past the Detroit river light and steer for the lightship instead of Bois Blanc island light and that brings them right in the line of our black buoys. They have been carrying them away all summer but last week was the worst we have had. I replaced them all and left them all right and now there are two gone and I have nothing on hand belonging to you to replace them with. I find there is water enough to let us move the first five black spars over in line with where the lightship is now moored and do away with the two lower ones altogether as those two are the hardest to keep; it seems almost impossible to keep them as they now are. The heavy draft boats are the ones that need them and the light ones do not damage anything in the shape of a boat that is out just now. What am I to do?

Very respectfully,
(Signed) ANDREW HACKETT.

SHIPPING AND DISCHARGING SEAMEN.

Returns of United States shipping commissioners (except Norfolk), for the fiscal year ending June 30, 1899, show

75,106 men as having signed articles, and 45,444 discharged, compared with 72,643 shipments and re-shipments and 43,752 discharges for the previous fiscal year. The increase is chiefly at Boston, San Francisco and Port Townsend. Shipping commissioners at New York and San Francisco co-operated without extra pay with the War Department in shipping crews for army transports. Such shipments in New York numbered 7,059. While the work of the service was considerably greater than during the previous years, the cost to the government was \$51,727 the past year, compared with \$58,387 for the previous year.

Of 120,550 shipments and discharges, 35,627 were at New York, 30,441 at San Francisco, 13,043 at Boston, 10,442 at New Orleans, and 8,014 at Philadelphia. Of 75,106 shipments, including in many cases repeated voyages of the same seamen, 27,009 were Americans, 16,117 were Scandinavians, 13,722 British, chiefly of British North America, 6,711 Germans, and the balance of other nations, including many Portuguese on the Massachusetts coast. Shipments in the deep sea trade across the Atlantic and Pacific were 11,542 on steamships, and 7,262 on sail vessels. Owing to repeated voyages the shipments on steamships, however, represent less than 2,500 individual seamen. Shipment before a commissioner is optional in the coasting trade or trade to British North America, the West Indies, Mexico and Central America, so the returns give no indication of the number of merchant seamen in these trades.

SUEZ CANAL PASSAGES.

From a weekly return of the passages of ships through the Suez canal it is learned that out of a total of 61 steamers which navigated the canal during the week ending July 22, five did not avail themselves of the electric light for night navigation, the average time taken by these being 25 hours 33 minutes; they are, however, shown as being quarantined. Of the others which utilized the electric searchlight the shortest time made was 14 hours 20 minutes, this being done by the Gladys Royle, from Port Said for Kurrachee, in ballast. Six exceeded 20 hours in transit, the remainder being under that time, while the average time occupied by the 56 steamers in passing through the canal was 16 hours 50 minutes. Of the 61 steamers 39 were British, 8 German, 4 Dutch, 2 each of French, Italian, and Japanese, and one each of Russian, Norwegian, Spanish and Austrian.

Admiralty—Jurisdiction—Injury to Property on Pier.—Where a steamship struck against a pier extending into navigable water, breaking it and causing property lying thereon to fall into the water, where it sank beyond recovery, the legal injury was done upon the pier, which is land, and not in the water, and a suit to recover for the loss is not within the jurisdiction of a court of admiralty. The Haxby, 95 Fed. Rep. (U. S.) 170.

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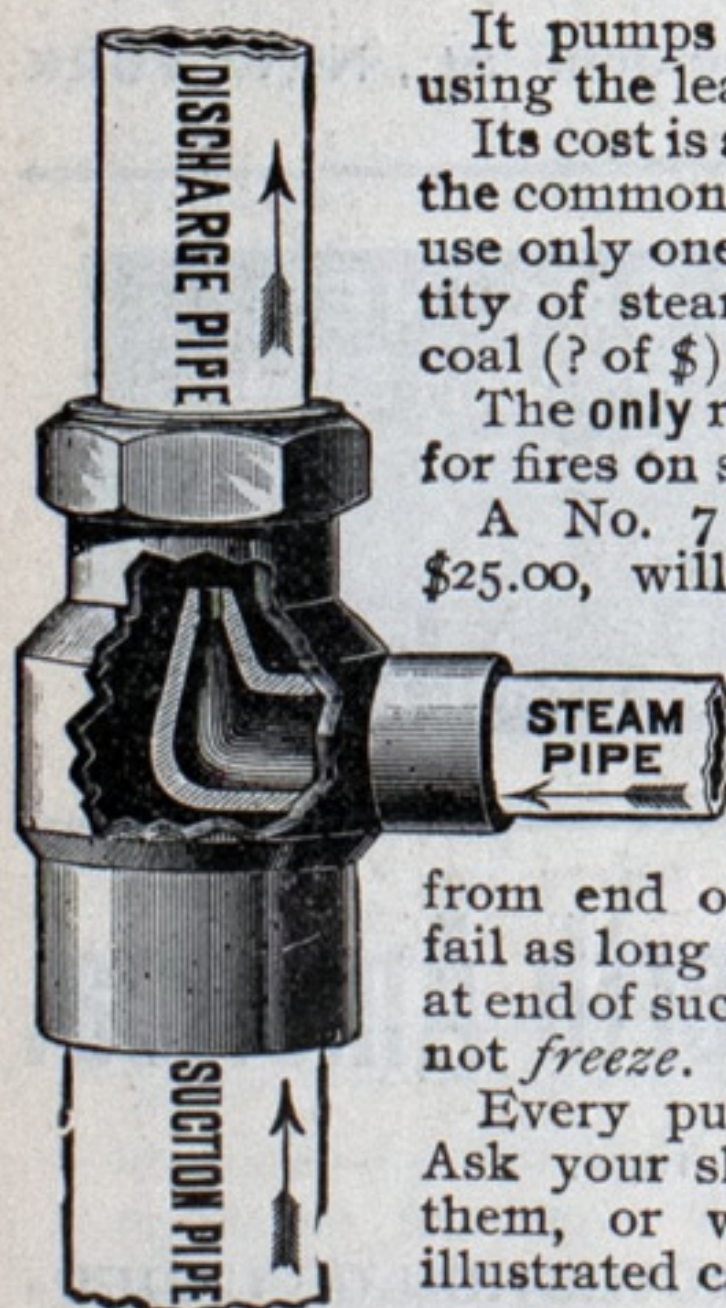
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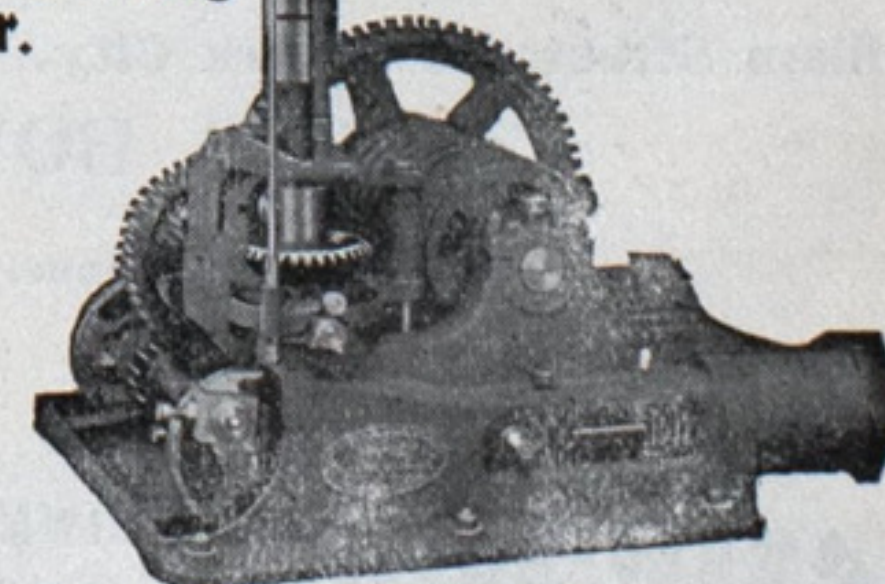
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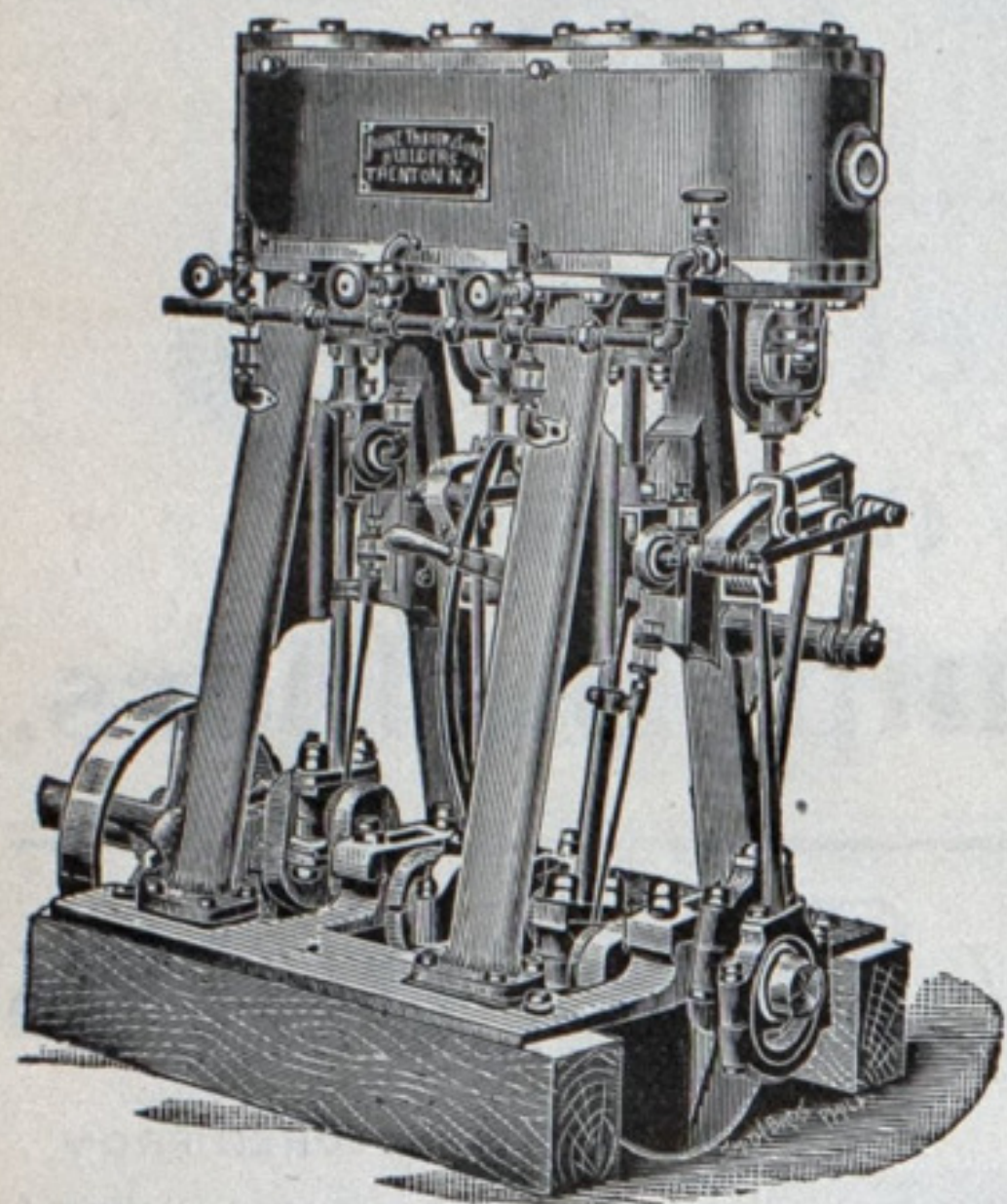
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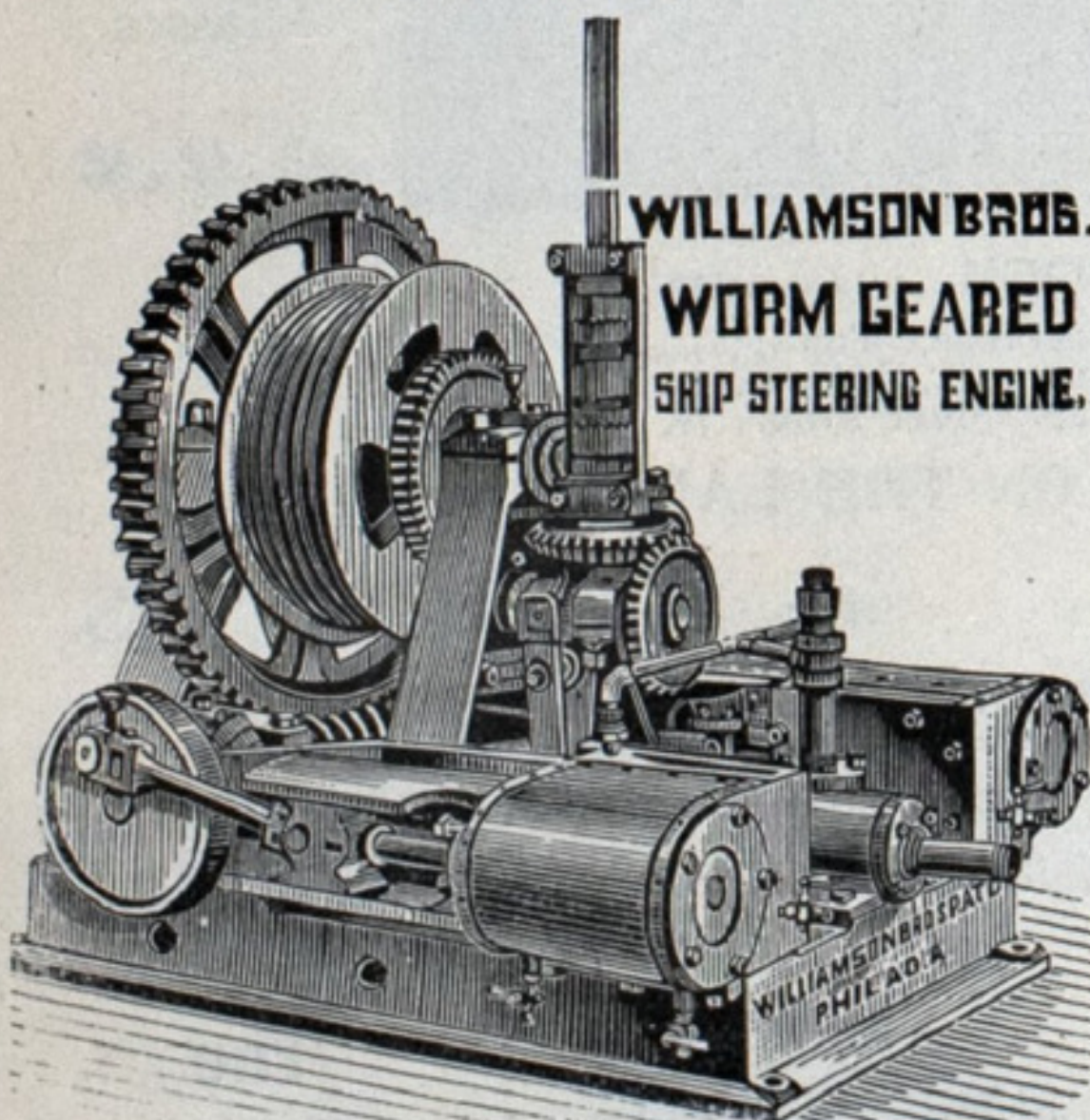
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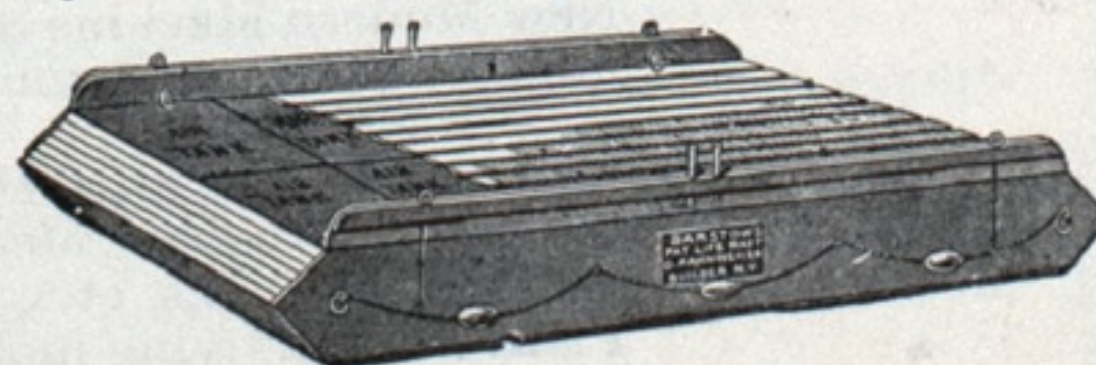
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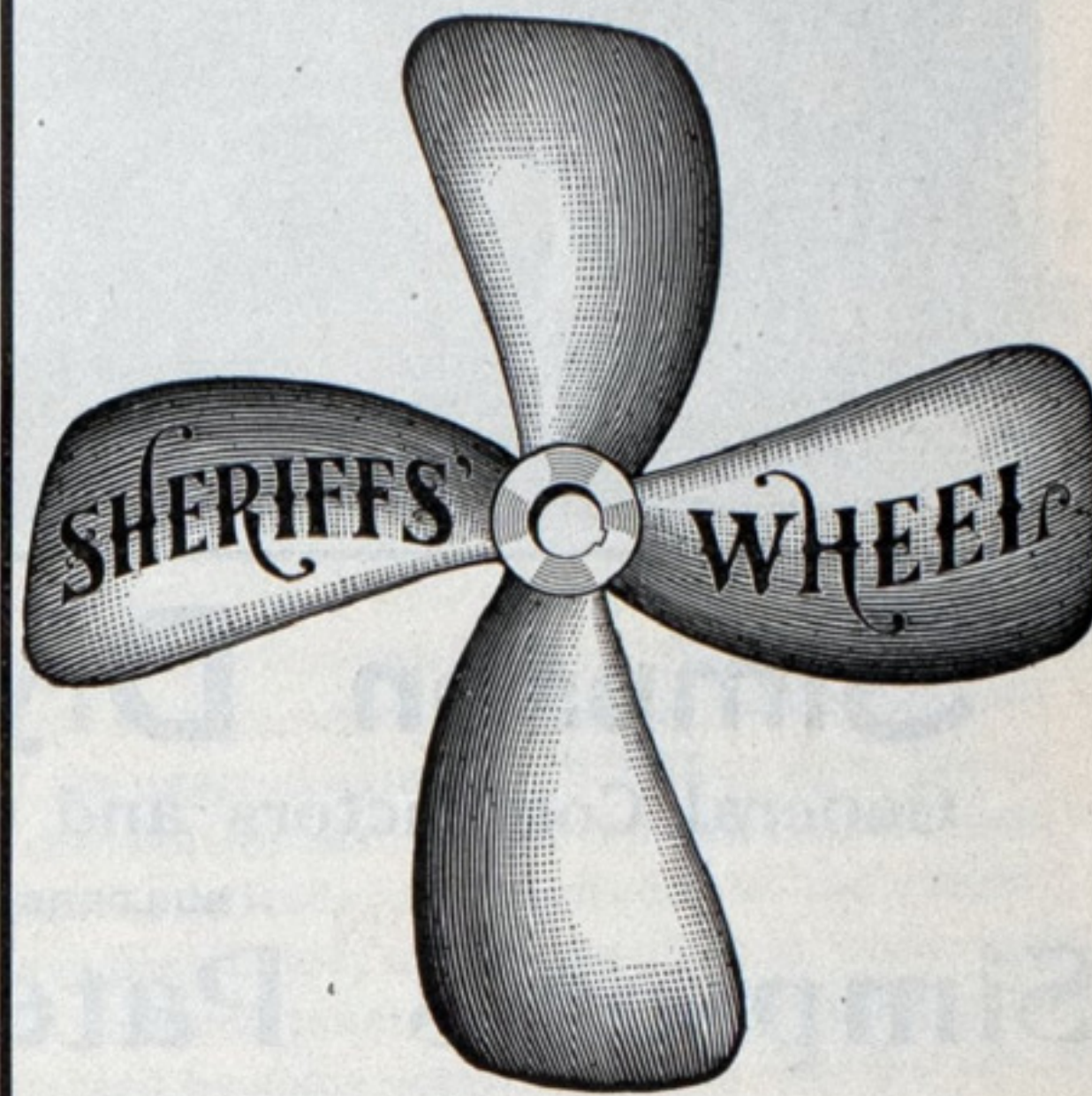
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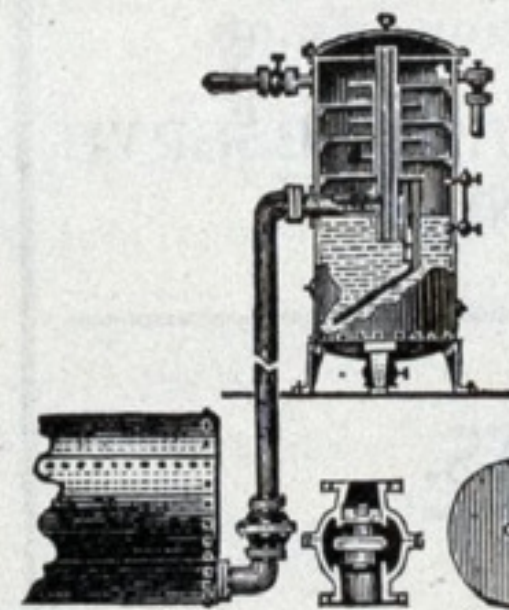
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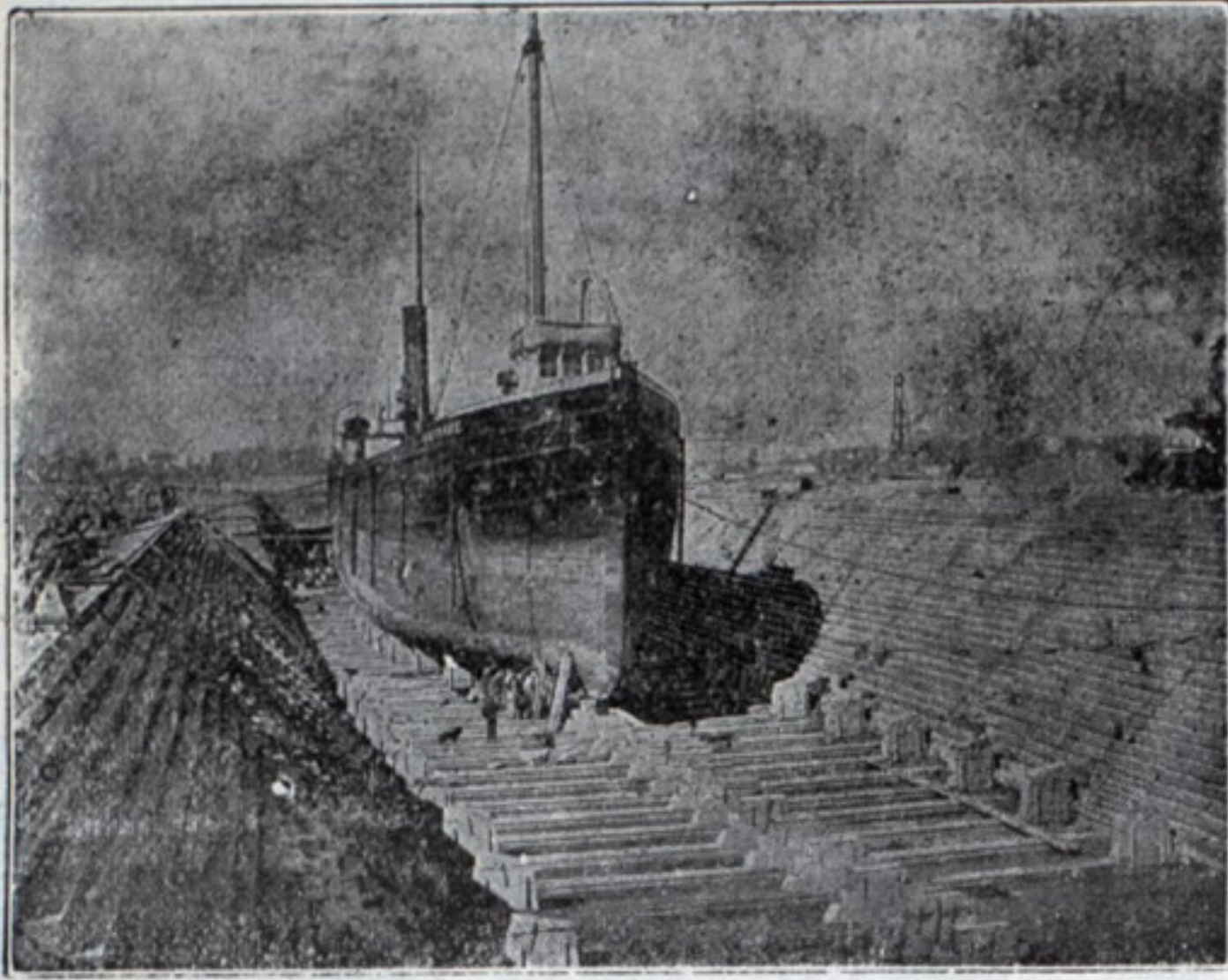
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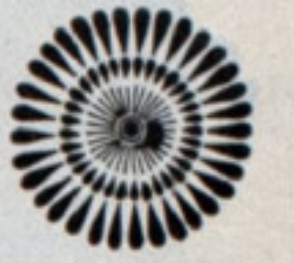
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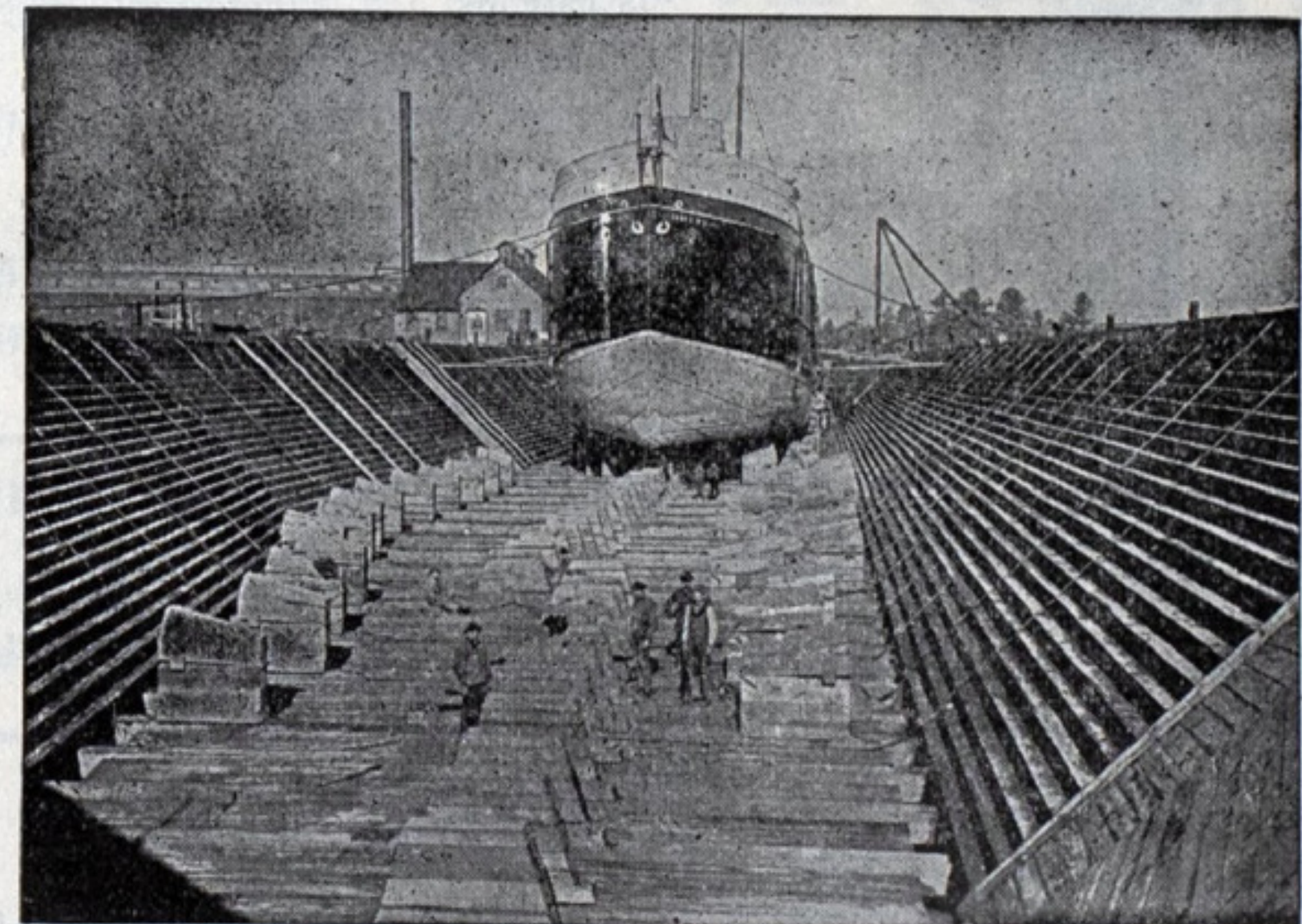
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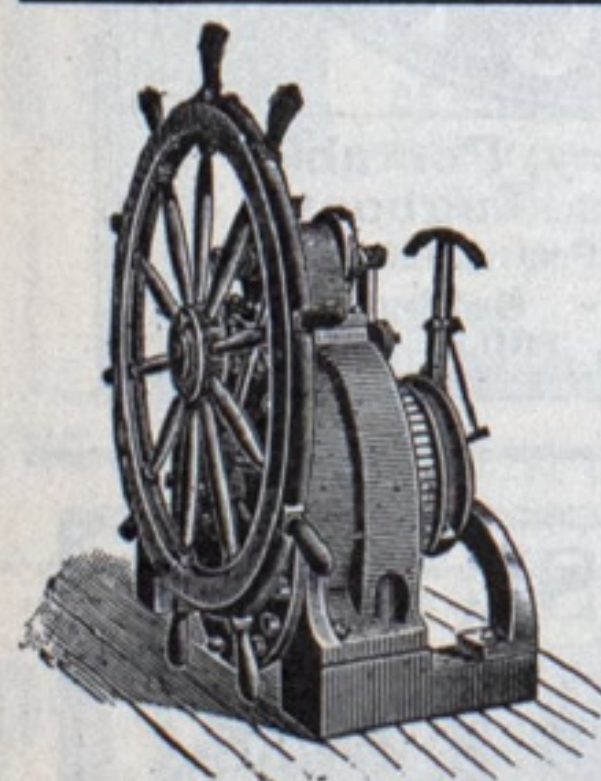
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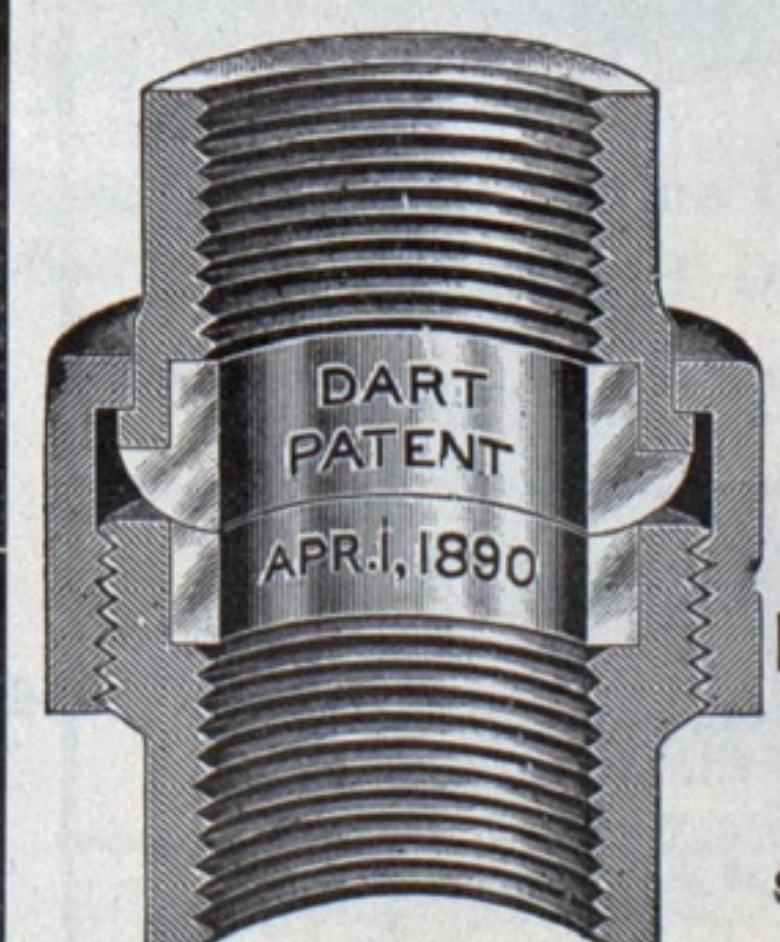
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